

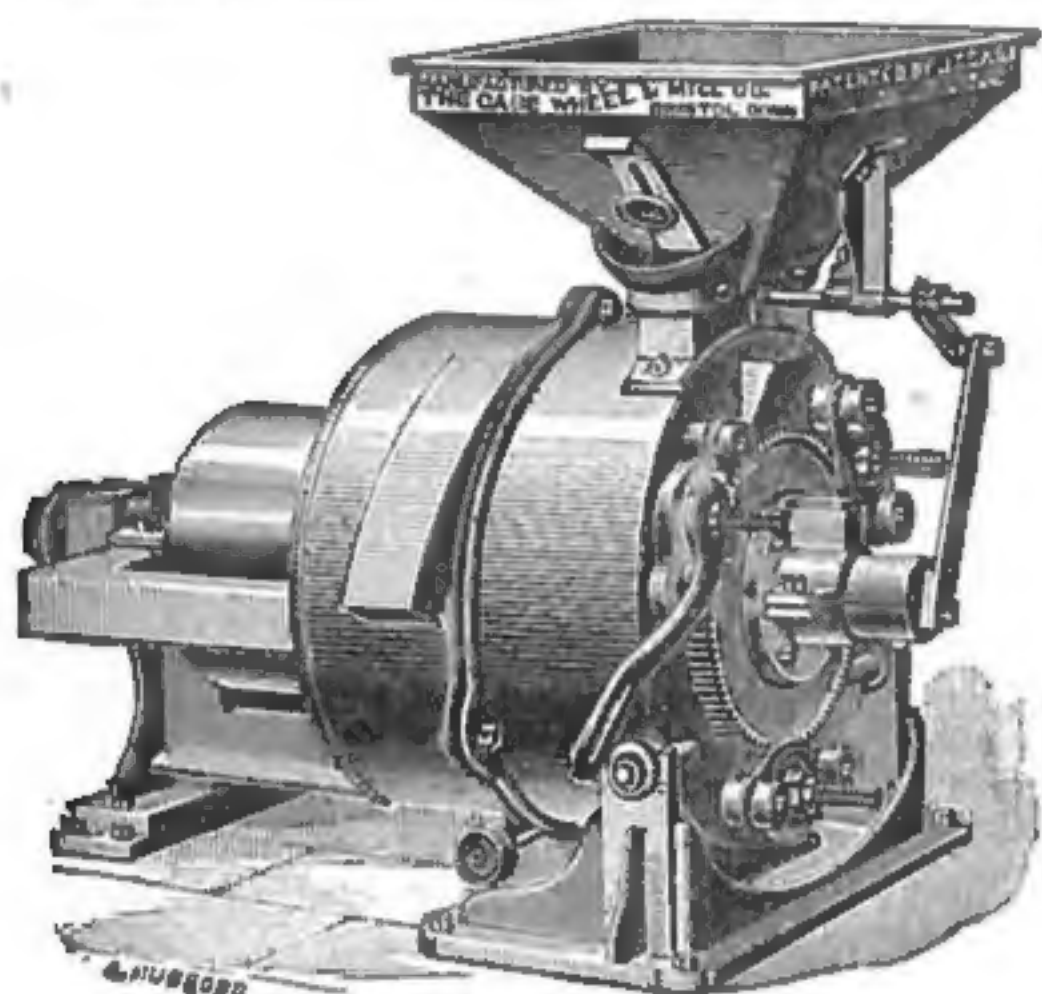
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XX. No. 15.

BUFFALO, N. Y., JUNE 10, 1889.

\$1.50 PER YEAR.



VICTORY OVER ALL OTHERS. SINGLE & DOUBLE VERTICAL GRINDING MILLS.

(J. T. CASE'S PATENT.)

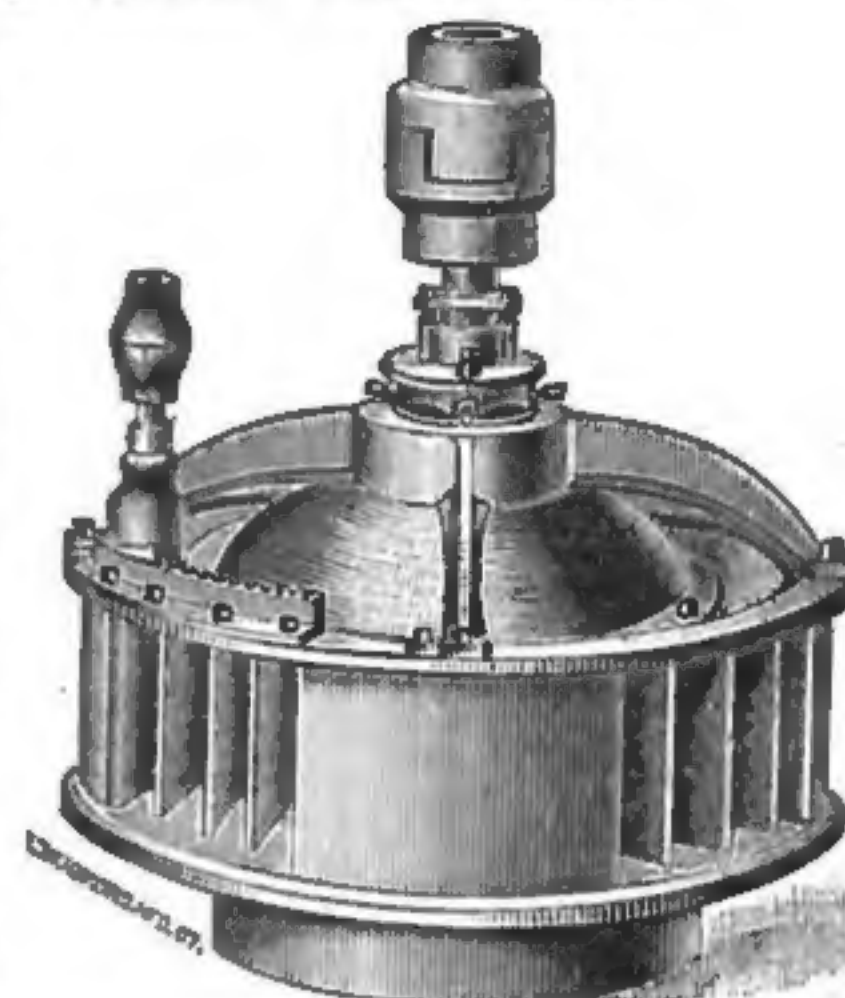
FACTS ARE MIGHTIER THAN ASSERTIONS. READ WHAT THEY SAY:

"Our 20-inch mill made by the Case Wheel & Mill Co. is in every respect satisfactory, easy to handle, and best results obtained of any mill in the country, with same quantity coal and power."—A. S. RUSSELL & Co., Meriden, Conn.
"Superior to any mill in use."—Geo. WESTON, Bristol, Conn.
"The best satisfaction in quantity and quality."—CHILD'S ELEVATOR, Manchester, Ct.
"We take pleasure in recommending it."—GARLAND, LINCOLN & Co., Worcester, Mass.
SEND FOR CATALOGUE—ILLUSTRATED AND DESCRIPTIVE.

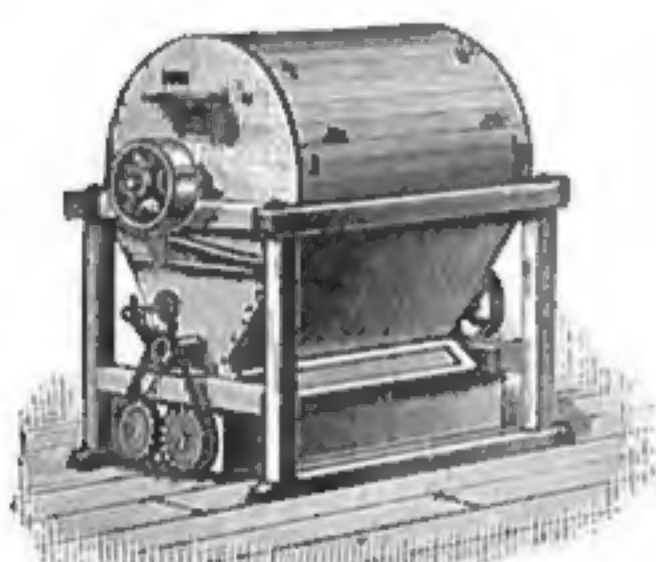
The Improved National Turbine Water Wheel

The Best for Economy; The Best for Durability; The Best for Power. ONE THOUSAND FIVE HUNDRED NATIONAL WATER WHEELS IN USE Prove that our Assertions are Supported by the Leading Manufacturers in the Country. Send for illustrated catalogue and prices to the manufacturers.

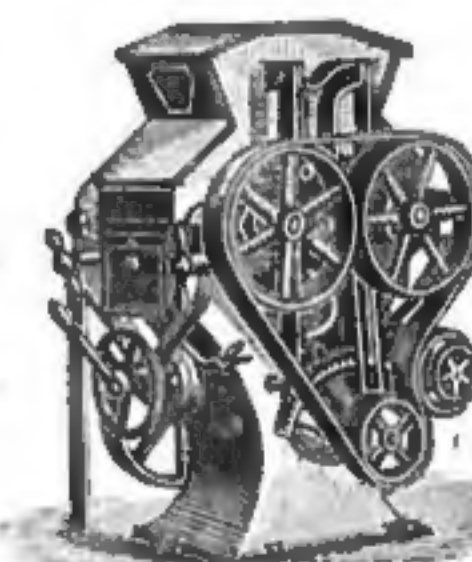
The Case Wheel & Mill Co., Bristol, Conn.



THE ONLY NOISELESS SIEVE SCALPER.



Bran Duster.



Wheat Roller Mill.

Immense Capacity.

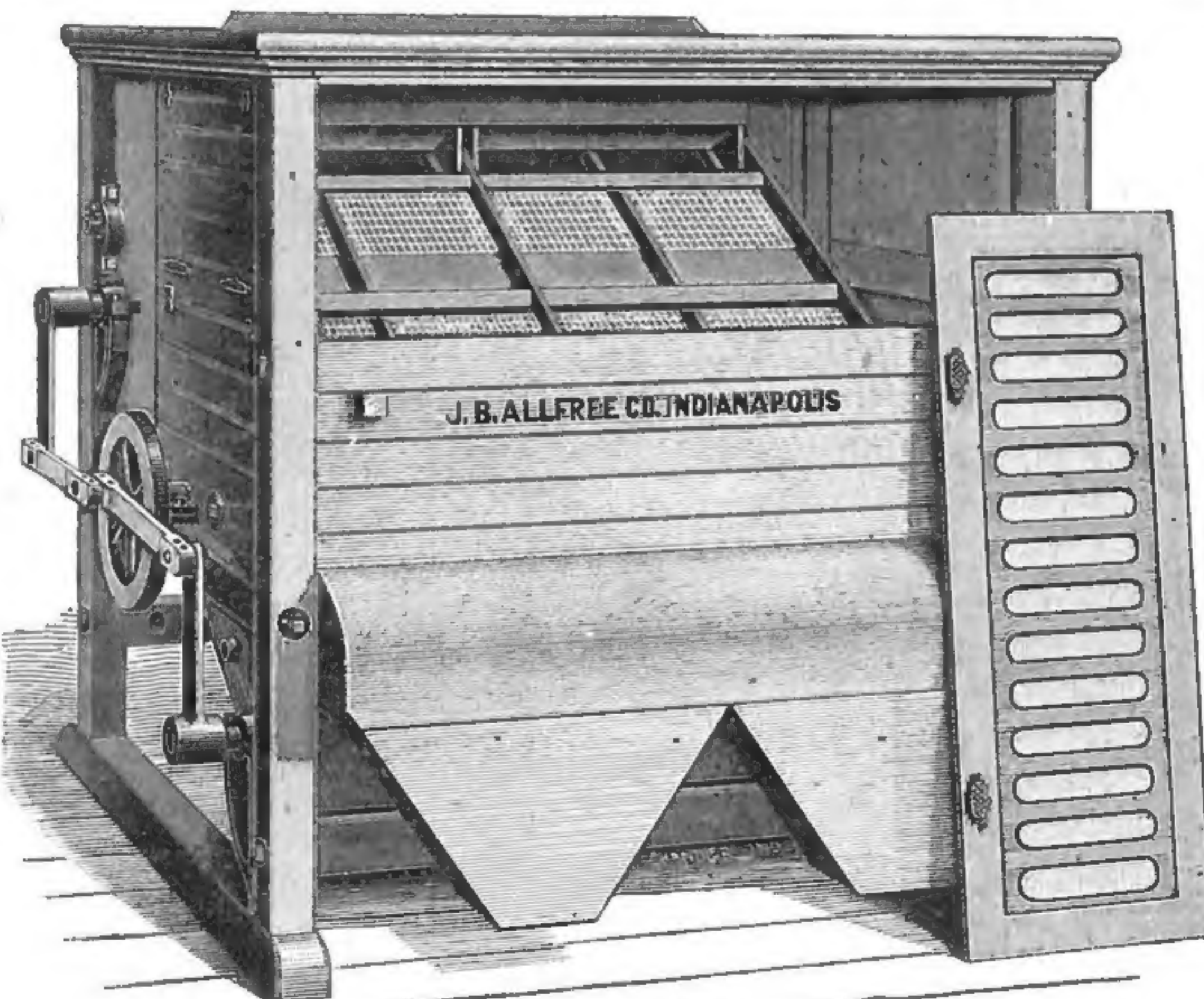
Power

Required

Merely

Nominal.

It will Take Care of
3 or 4 Breaks in a
100-Barrel Mill.



Buy our Scalpers and
thus avoid the terrible
racket made by
other machines; ours
is Noiseless.

It will Take Care of
1 Break in a 500-
Barrel Mill.

The J. B. Allfree Sieve Scalper.

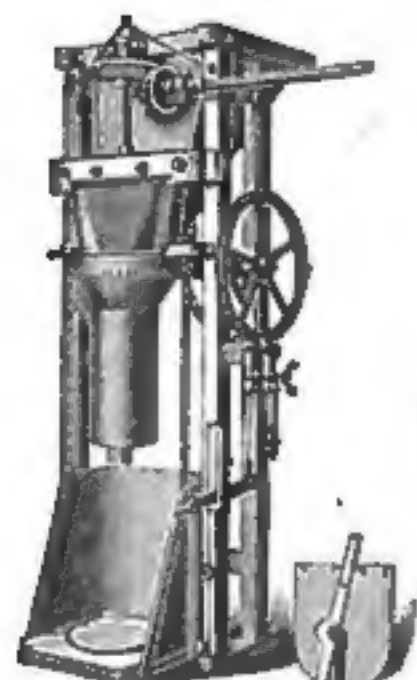
—ADDRESS FOR PRICES, ETC.—

The J. B. Allfree Co., Indianapolis, Ind.

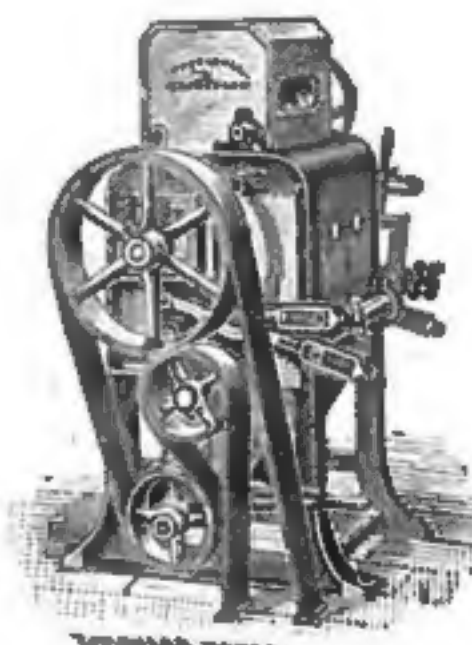
103 AND 105 SOUTH PENNSYLVANIA STREET.

Mill Builders and General Mill Furnishers.

DUFOUR BOLTING CLOTH A SPECIALTY.



Flour Packer.



Corn Mill.

Some Millers' Opinions

EXPRESSED THIS YEAR, 1889.

SHREVE, O., Jan. 25, 1889.
THE CASE MFG. CO.

Gentlemen: We called at Bank Jan. 22d and paid our last note, which we believe closes our dealings so far as our contract with you for remodeling our mills is concerned. We want to say that we are entirely satisfied with all our dealings with you. Our mill is all we could expect, and is doing us good work. Extending to you our best wishes, we remain,

Very respectfully yours,

FOLTZ & BRENNAN.

WAVERLY, O., JAN. 27, 1889.
THE CASE MFG. CO.

Gentlemen: Although it has been but a few weeks since I have gotten my Waverly Roller Mills started as recently re-furnished with your system of breaks and rolls, yet I have already learned to my satisfaction that your outfit of milling machinery is the best in use to-day. I am now making a grade of flour that is equaled by few and excelled by none, in fact superior to any flour produced in this part of Ohio, and is fast distancing all competitors in the market. I can conscientiously recommend you as General Mill Furnishers.

Yours truly,

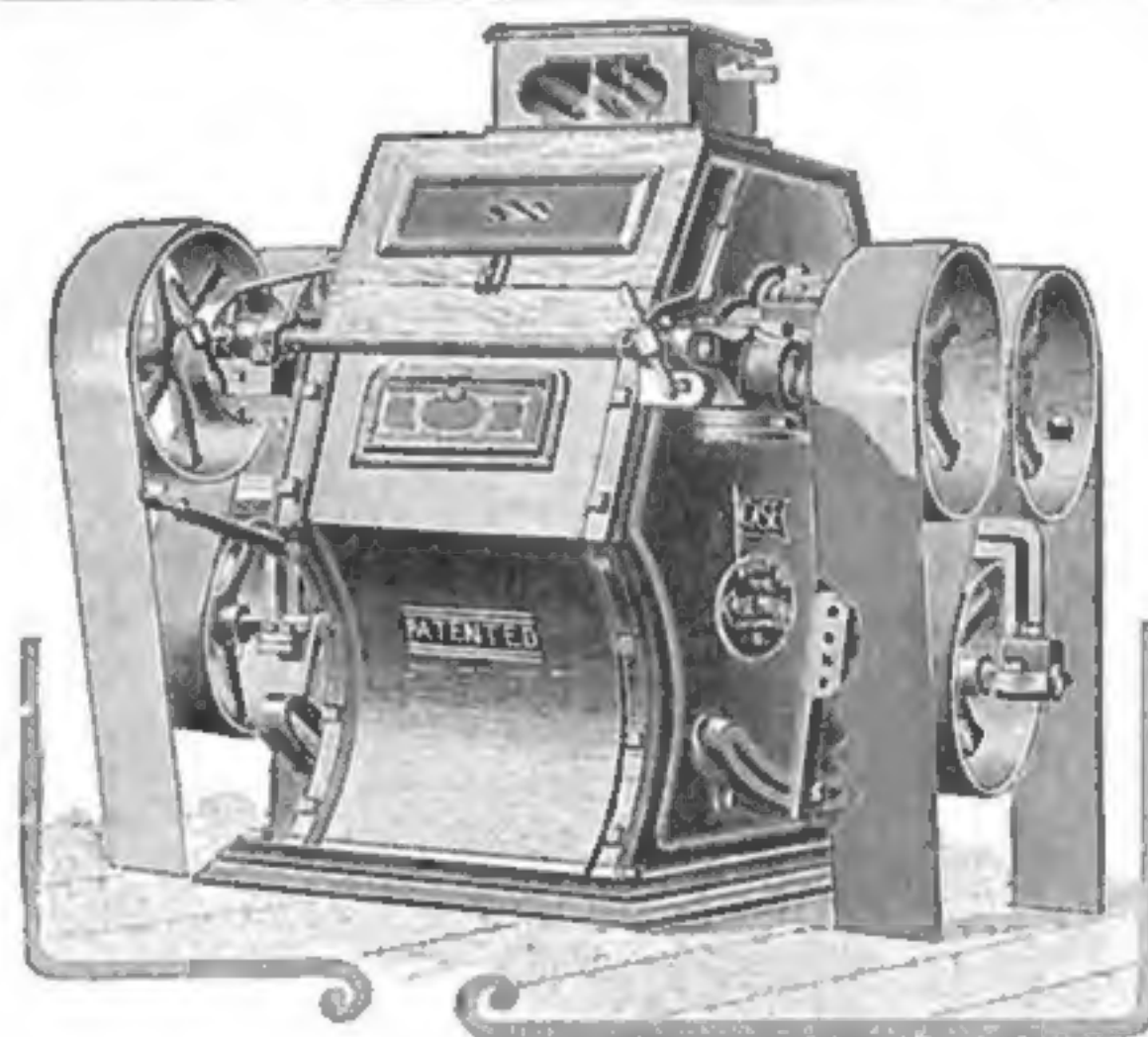
JAS. EMMETT.

E. M. NEWTON. D. B. SMITH. G. TERRY.
OFFICE OF GUTHRIE MILL CO., }
GUTHRIE, KY., Feb. 26, 1889. }
CASE MFG. CO.

Gentlemen: Yours of the 20th to hand and in answer to inquiry about the five Inter-Elevator Flour Dressers bought of you will say that they are working perfectly satisfactory, and we regard them as being the best bolts we have ever seen, and if we had to build another mill, would use no other. We will take pleasure in showing and recommending them to any one who may be in need of a Flour Dresser. Wishing you much success in the future, we remain,

Yours truly,

GUTHRIE MILL CO.,
By E. M. Newton.



The Gem Roll of the World.

LEONIDAS, MICH., Feb. 4, 1889.
THE CASE MFG. CO.

Gentlemen: In reply to yours of the 31st ult., as to how I liked your machinery, would say I have a 3-break mill using 3 double stands of 6x18 Case rolls, one double stand of 6x15 rolls made by another firm. We started our mill September 1, 1888, and I must say *your rolls are more than you claim for them.* They started from the word "go." Not a single "hot journal," or any thing else to cause any trouble in the least. The other stand has been a continual bother from the start, running hot, and the feed would not work only in bunches, and let me say right here *that they cost me more money than the Case did.* and I mean in the near future to displace it by a Case. Your feed is *simply perfect.* It feeds even the full length of the rolls, and the beauty of all is we can stop and start the Case Rolls without touching a single lever; the other stands wants two men to stop and start. I also have a double stand of 9x18 Case rolls for feed. It does good work with half the power a 36-inch buhr took for same amount of work. Should you wish to send any parties here to see my mill at work, I can prove to them all I have said. With very best wishes to the Case Company, I am, very respectfully yours,

GEO. ENGEL,

Successor to Espenhain & Engel.

WE BUILD NONE BUT FIRST-CLASS MILLS

AND WILL GUARANTEE

Each Mill We Build to Produce Results Excelled by None

COMPLETE LINE OF MILL SUPPLIES AT LOW PRICES.

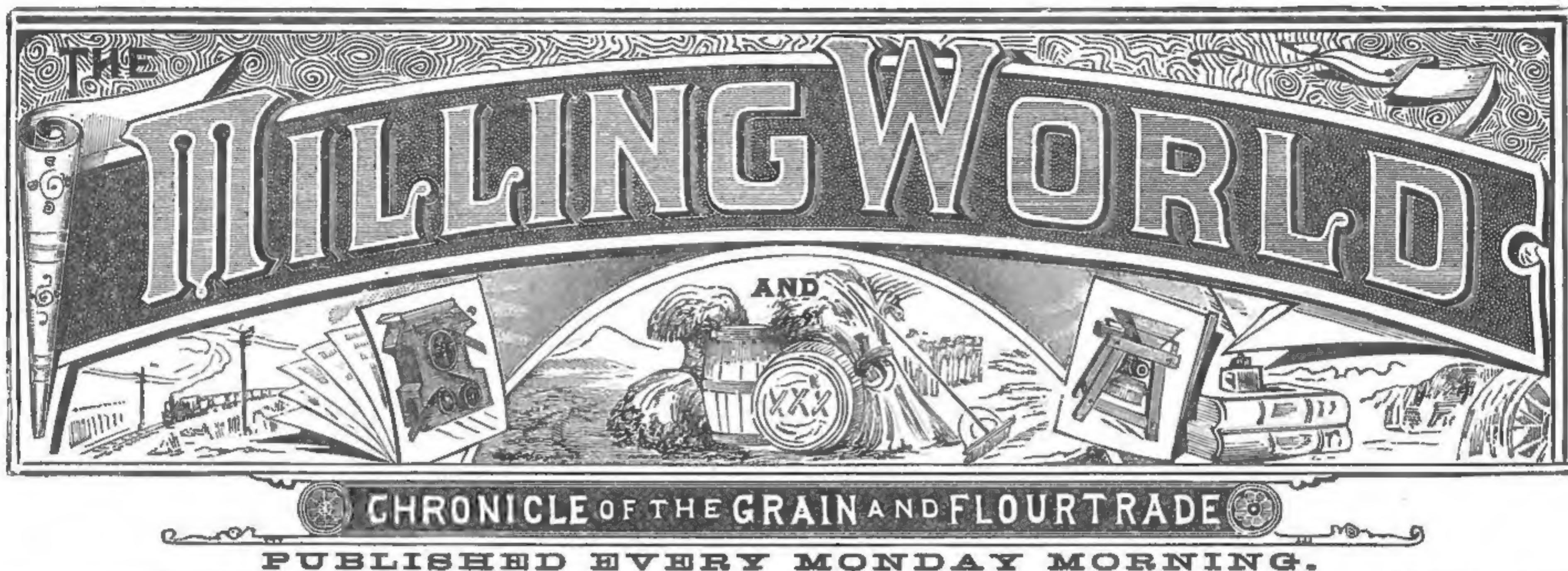
We have the most Complete Plant for Regrinding and Recorrugating Rolls, and put in Any Style Cut Desired.

MACHINE WORK OF ALL KINDS DONE PROMPTLY:

—ADDRESS—

THE CASE MFG. CO., COLUMBUS, O.

PLEASE MENTION "THE MILLING WORLD."



VOL. XX. No. 15.

BUFFALO, N. Y., JUNE 10, 1889.

\$1.50 PER YEAR.

HERE'S to you, Gentlemen of the Millers' Association in convention assembled at Milwaukee! Talk. Think. Act. Talk as little as possible. Think as much and as wisely as possible. Act promptly and decisively. Choke off the gabblers. Stick to your text. Have a good time. Go home contented.

WE are pleased to hear it rumored that the genial Editor Reifsnider, of "The St. Louis Miller," is about to put in operation a second flouring-mill. We congratulate you, "Reif." Success to all your mills. We shall be more than pleased to know that one milling journalist is a milling millionaire, and we would as willingly see you, "Reif," the fortunate one as any man of us all.

MILLING is the last of the great industries that will suffer depression. Standing closest to the first great need of the human race, the need of food, it must exist so long as the race exists. Pessimistic sensationalists should not forget the relation of milling to the needs of the human race when they erect their ears and begin to bray blue ruin over the industry of flour-making.

THE Manitoba government is said to be making preparations to send a commission into Minnesota, Michigan and Wisconsin for the purpose of gathering information about the condition of the farmers of those states. It is said that the Canucks propose to start an emigration boom from the United States to Canada in general and to Manitoba in particular. When the sky falls, it will rain larks!

MILLING journalists in general and particular, will laugh ready to split their sides to see the invitation to a general rough-and-tumblecatch-as-catch-can contest issued by Editor Cawker, in the May number of his "The United States Miller and The Milling Engineer." Say, Colonel, who wants to fight? We all like you, and we all grieve judiciously to see this belligerent spirit displayed by you. Nobody is spoiling for a fight. Just keep cool. Take a ride in your one-hoss shay, paid for in advertising, and you'll feel better. It is probably the over-lengthy cognomen of your journal that ails you.

BRITISH writers, in view of the very favorable crop conditions in the United States and Canada and of the reasonable certainty of enormous wheat crops in the two countries, are beginning to fear that the British miller will soon again be in the relative position which he occupied in 1887 and 1886. Should the present wheat prospects be realized, American millers will have an abundance of cheap and fine wheat to grind next fall and winter, and they will again be able to pour into British markets such quantities of cheap, strong, fine, sound and homogeneous flour that the British millers will find it very difficult to hold their own.

BUFFALO millers are reported to have done a remarkably neat stroke of business when they "took in" 600,000 bushels of fine wheat of the crop of 1887 several months ago. It is now said that the flour they are making from that wheat is superior to any flour which the Minneapolis mills are able to make from the grain of 1888. The Buffalo flour is going to

Chicago and other cities to supply the most exacting trade. While this circumstance does not mean that Buffalo has "snatched the scepter of supremacy as a milling center" from Minneapolis, it does mean that the Buffalo millers know how to make as fine flour as can be made, and that they know good and poor wheat when they see it.

THE government and the citizens of the United States find it very difficult, even impossible, to conduct business affairs, to regulate tariffs and to manage this country so as to please the captious foreigners who are acting as importers in New York, Chicago and other cities. These foreign gentlemen are very free in their advice, their complaints, their criticisms and their remonstrances, and from their standpoint the country seems to be going to ruin. Nevertheless the citizens of the country seem to be getting along reasonably well, and it is noticeable that the more American institutions are not shaped and conducted to please these foreign gentlemen, the more prosperous and progressive does the country continue to be. We can have no serious objection to the presence and residence of unnaturalized foreigners in the United States, but we can not help wishing that they had better and more genteel ideas of the proper relations of benefactor and beneficiary. Messieurs Foreign Grumblers, give the United States a show!

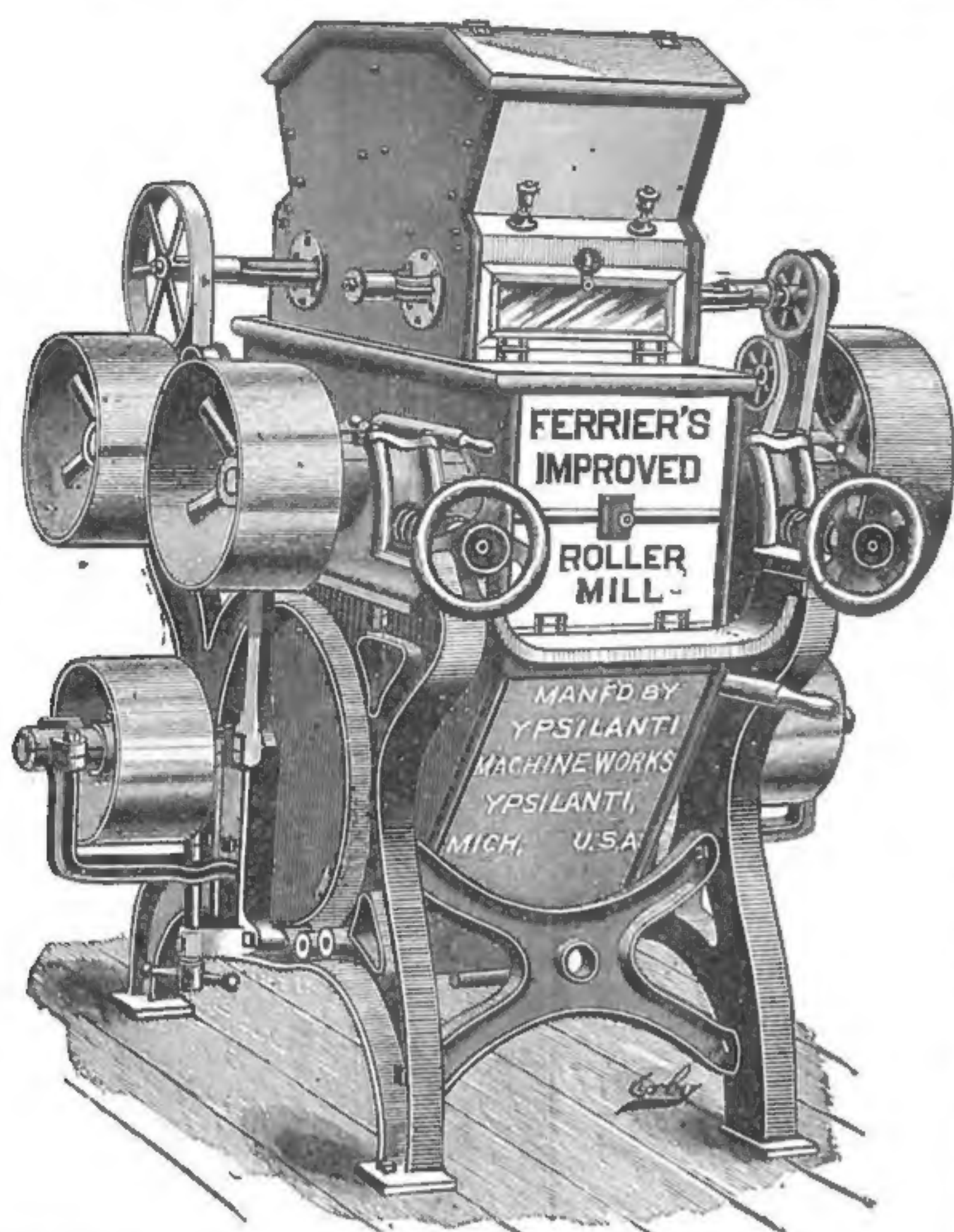
OBSERVERS who do not observe assert that the culture of wheat in the United States has passed its climax, that it will steadily decrease in the next few years, and that as a profitable occupation it no longer leads. Let us see. This country now has about 65,000,000 inhabitants. The wheat consumed by them averages about 350,000,000 bushels annually. We raise a surplus of from 80,000,000 to 120,000,000 bushels a year on our present acreage. Taking the latter figure, 120,000,000 bushels, as a basis for calculation, and allowing our population to increase $2\frac{1}{2}$ per cent. a year by natural increase and immigration, how long will it be before we shall need every bushel of our now exported surplus to feed our own people? The increase in population will be about 1,500,000 annually, calling for about 7,500,000 bushels of wheat more each year to feed the new consumers. Even if the increase called for only 6,000,000 bushels more each year, we shall have overtaken our 120,000,000-bushel surplus in 20 years. In other words, in 1909 the United States, sowing only the present acreage to wheat, will have no surplus for Great Britain or any other country. It is easy to understand that, as the demand outgrows the supply relatively, as the home consumption gradually overtakes production, wheat-growing may yet become a far more profitable industry than it is now or than it ever has been. European economic writers foresee the inevitable expansion of the home consumption demand in the United States, and they appreciate the situation so well and so thoroughly that they openly advocate the development of India or any other wheat-growing country that promises to grow enough wheat to supply Europe's needs when the American supply shall be needed for the American demand. Meanwhile, wheat-growing in America remains a great industry, that shows no signs of decadence and that promises great things for the future.

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

MILL BUILDERS

And Manufacturers of

FLOUR MILL MACHINERY



Sizes of Ferrier's Improved Four-Roller Mills.

6x12	6x15	6x20
9x15	9x18	9x24

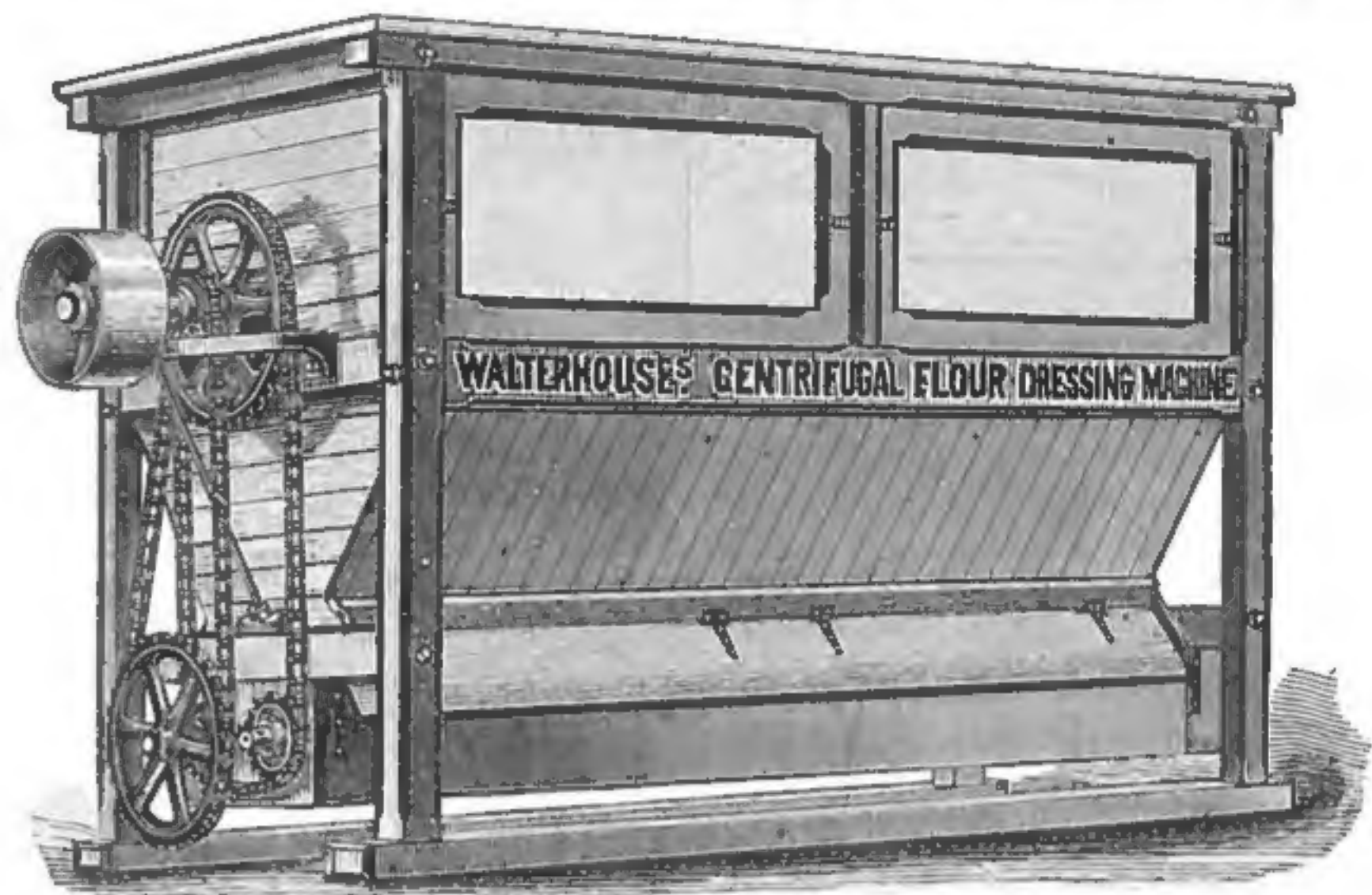
YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

Gentlemen: We have had a line of your "Roller Mills" in use for over two years, and they have given entire satisfaction in every respect. They work like a charm, and their ease of adjustment and solid structure, together with the excellent finish you give them, can but recommend your machines to the milling public.

Yours respectfully, A. R. DICKINSON & CO.

NASHVILLE, TENN., MAY 3, 1889.

Dealers in Bolting Cloth. Walterhouse's Centrifugal; Walterhouse's Slow-Running Flour Dresser with Inside Cylinder; Plain Round Reels; Scalpers, Bolting Screens, Etc., Etc., Etc.



JOHN ORFF, PROPRIETOR OF
EMPIRE FLOURING MILLS,
FORT WAYNE, IND., APRIL 10, 1889.

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

Gentlemen: The Centrifugal Reel bought from you some time ago is doing its work complete in every respect. It does a large amount of work, and does it well. Should we make further changes in bolting, shall use more of them. Wishing you success, we remain,

Respectfully, JOHN ORFF.

To YPSILANTI MACHINE WORKS.

OFFICE OF LEXINGTON MILL CO.,
LEXINGTON, MICH., JAN. 22, 1889.

Gents: In reply to yours of June 5th, would say that we are well pleased with our mill. It has more than met our expectations. Although it was feared that the six-inch rolls would not prove a success, we find them to be complete in every respect. We are making as fine a flour as there is made in the state, and we guarantee our patent to be equal to Minnesota Patent. The mill has given us no trouble whatever since we started it, and for plan and workmanship, your Mr. G. Walterhouse deserves great credit. If your friends doubt it would be pleased to have them come and see for themselves.

Yours respectfully, LEXINGTON MILL CO.

Dawson's Roller Mill

Is acknowledged to be the very best in the market. It has our Patent Automatic Centrifugal feeder, never failing to feed the stock the full length of rolls in an even sheet. It is the Latest and Best feed out, uses less power and is simple in construction. It can be placed on any style of machine with little expense. We use for roll bearings phosphor-bronze metal which will admit rolls being run at any speed without heating and with little friction, and uses little oil. We use the Dawson Corrugation, which is admitted the best in long or short system mills as the action is granulating rather than CUTTING.

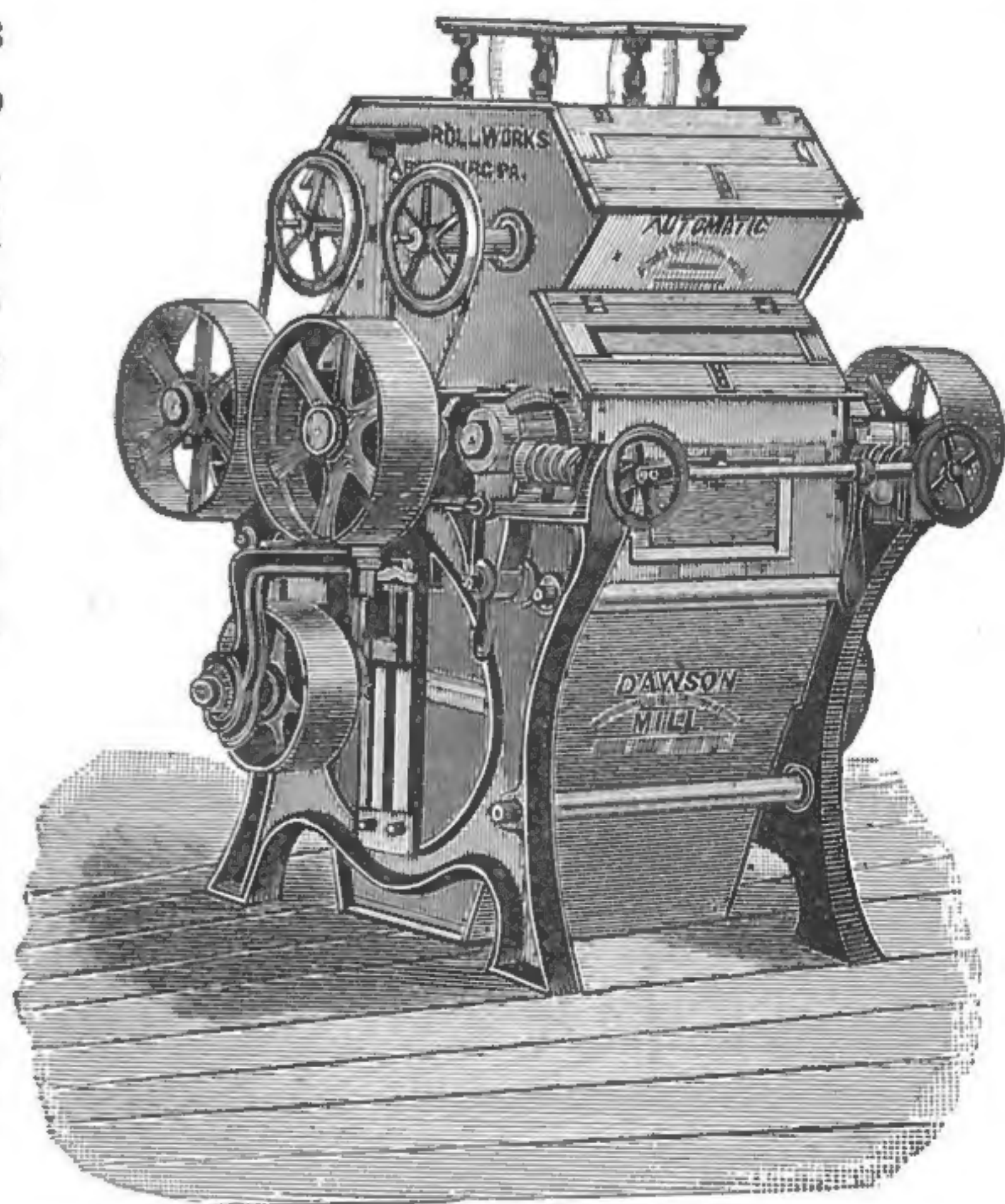
We have a large plant to Re-grind and Re-Corrugate Rolls.

Owing to our late increased facilities and central location we are enabled to ship goods promptly on the shortest notice.

PARTIES CONTEMPLATING REMODELING THEIR MILLS OR BUYING ANY ROLLER MACHINES ARE REQUESTED TO PUT THEMSELVES IN CORRESPONDENCE WITH US.

FOR PRICE LISTS AND CIRCULARS, ADDRESS,

Dawson Roll Works, Harrisburg, Pa.



THE MILLING WORLD

AND
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY. OFFICES: { Corner Pearl and Seneca Streets,
Over Bank of Attica.
McFAUL & NOLAN, - - - PROPRIETORS.
THOMAS MC FAUL. JAMES NOLAN.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; remit by Postal Order, Registered Letter, or New York Exchange. Currency in unregistered letter at sender's risk.
To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.
Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Rates for ordinary advertising made known on application.
Advertisements of Mills for Sale or to Rent; Partners, Help or Situation Wanted, or of a similar character One cent per word each insertion, or where four consecutive insertions are ordered at once, the charge will be Three cents per word. No advertisement taken for less than 25 cents. Cash must accompany all orders for advertisements of this class.
Orders for new advertisements should reach this office on Friday morning, to insure immediate insertion. Changes for current advertisements should be sent so as to reach this office on Saturday morning.

EDITOR'S ANNOUNCEMENTS.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trades.
Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.
This paper has no connection with a millfurnishing house and aims to represent the trade without prejudice, fear or favor.
Address all communications

THE MILLING WORLD,
BUFFALO, N. Y.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 cent for each additional word. Cash with order. Four consecutive insertions will be given for the price of three.

BUCKWHEAT MILLING A SPECIALTY.

A reliable Roller Miller wants work. Can make one-third more buckwheat flour than average millers, conditions the same. Granulated meal, etc. H. N. Z., 228 James street, Buffalo, N. Y. 710

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 cent per word, for one insertion, or 3 cents per word for four insertions. No order taken for less than 25 cents for one insertion, or 50 cents for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

WANTED.

To rent a small flour mill, roller preferred, with view of buying, or buhr mill properly located. JOHN G. DIXON, Gratiot, LaFayette county, Wis. 14

A GOOD OPENING.

A good opening is offered for an Exchange and Custom Flouring Mill at Waterville, Southern Minnesota, in the centre of the Cannon River Valley. The best wheat district in Minnesota. For further details address DAVID B. PARSONS, Waterville, Minnesota. 1417

FOR SALE.

Several good second-hand and new turbines of various styles. Second-hand price list and descriptive matter and prices of our new machines sent free. Every one interested in the shortest route to successful milling on rolls or in grinding corn and feed with the least expense of power, should address us before buying.

FLENNIKEN TURBINE CO.,
Dubuque, Iowa.

8tf

MILL MACHINERY FOR SALE.

One No. 0 Standard Combined Separator, Smutter and Brush Machine; new, best make.
One 20-Inch Vertical Portable Mill, French Buhr Stone, hung on horizontal shaft; capacity 25 to 40 bushels per hour; new, best make.
One 14-Inch Vertical Feed Mill; best make, new, a bargain.
One No. 6 Dustless Separator; new, a bargain.
One No. 1 Full Rigged Combined Dustless Separator; new, a bargain.
Four Corn Cob Crushers, right or left hand, driven from above or below, best make; capacity 40 to 60 bushels per hour.
Two No. 1 Corn Shellers. New.
One No. 2 Purifier. New. Best make. A bargain.
For particulars address, FRANK SMITH, care of THE MILLING WORLD, Buffalo, N. Y. 5tf



If you are desirous of obtaining the best Mill or Cob Crusher, send for our catalogue and be convinced that our's fill the bill. Can not fail to please you. They are guaranteed to prove as represented.

C. C. PHILLIPS,
OFFICE, 20 SOUTH BROAD STREET,
PHILADELPHIA, PA.

FOR RENT CHEAP.

A hundred-barrel flouring mill, and the late roller improvements, a large feed grinding trade in connection. Mill has a good exchange and local flour trade, situated on the C. and N. H. Ry, at Harvard Junction, sixty-three miles from Chicago. THE HARVARD SEWING MACHINE CO., Harvard, Ill. 1215

FOR SALE.

Our 4-run mill, water and steam power; water nine months of the year; mill lately fitted up with Aug. Heine System of Bolting. Mill is in first-class repair; also saw-mill on same dam; about thirty acres of land with the property; good stand for a roller mill, fine grain country in Central New York lake region; four miles from Lehigh Valley Railroad. Call on or address, MOSS BROS., Waterburgh, Tompkins county, N. Y. 1417

FOR SALE.

A flouring mill at Washington, Tazewell county, Ill., three run of buhrs, good engines and mill complete. Good wheat section and practically no opposition. Present value of milling winter wheat 72 to 75 cents. Coal \$2 per ton. Railroad tracks to mill. Will sell very cheap on easy terms. Apply to or address, P. B. & C. C. MILES, Room 24, Chamber of Commerce, Peoria, Ill. 1417

FOR SALE.

"Genesee Valley Mill," situated 27 miles south of Rochester, N. Y., on the Genesee River. Abundance of water power at all times. Western New York & Pennsylvania R. R. runs past its door. No carting needed; loads and unloads cars by elevators and spouting. Coal sheds, etc. Good trade. Size of main building 80x50 feet, four stories; wing 80x36 feet, two stories high. Three sets of first-class stones, one double set of rollers, all in good order. Large pump in mill to supply water for large salt block near by. Pump pays about \$300 per year. Splendid wheat country. Suitable dwelling house near by. Inquire at mill, or address, S. H. BASOM, Administrator, Alabama, Genesee county, N. Y. 1114

WE OPINE THE MILLING WORLD thinks it is something cute to stir up the editors of the milling papers. Some of these days he will wake up the wrong passenger.—St. Louis "Merchant, Miller and Manufacturer." O, come now, that's a libel! There is no "wrong" passenger on board the milling journal editorial train. Every mother's son of them is a "write" passenger, and how could a "write" crowd furnish a "wrong" man? Take it back, neighbor!

ONE esteemed cotemporary complains that another esteemed cotemporary has never had a good word to say about any other esteemed cotemporary in the line of milling journalism. That's all right. Buy an incubator, "advertise out" a one-hoss shay, a railroad pass, a photographic camera, a desk, some asthma specific, some rheumatic specific, some hop and boneset syrup, and drink lots of "Safe Cure," and we may all be happy yet, you bet!

THE way in which Chicago "Daily Business" continues to "do up" the pretentious "Bradstreet's" is evidently unpleasant to the unreliable New York journal. Probably the New Yorker may be driven by the Chicago castigation to put some real, honest, accurate labor into its compilations of crop figures hereafter. Every person interested in the publication of correct crop figures will commend Chicago "Daily Business" for its work in stirring up the unreliable guessers in New York.

It is rumored that Editor Cawker, of "The United States Miller and The Milling Engineer," has been invited to tell the Milwaukee convention all that he does not publish about United States milling and milling engineering. We hope the rumor is based on truth. As an expounder of milling and engineering Colonel Cawker would be a howling success. Drop a tailor's advertisement in "The United States Miller and The Milling Engineer" and get yourself a new suit of clothes. It's a new racket. It's a success. It's a time-honored custom.

ACCORDING to recent reports from Milwaukee the visiting millers will experience something new in the way of entertainment. The Milwaukee "Sentinel" of June 4 says: "The committee chosen to look after the entertainment of the visiting millers, who will arrive in Milwaukee June 11, met yesterday at the Chamber of Commerce. It was decided to leave banquets out of the question, but to fill the jolly millers full of the native amber beverage of Milwaukee. The visitors will be driven about the city, the tour extending from one brewery to another, and perhaps the ground will be traversed a second time. Schlitz park will be visited and a lake excursion will be made." What! A millers' convention without a banquet? The convention will have no "official organ" and no banquet! Is life worth living under such circumstances? Might it not be just as well to abolish the Millers' National Association along with the banquet and the "official organ"? No charge for the interrogatorial suggestion.

REAL MILLING POETRY.

SILE'S "IDEE."

This yer talk about 4:20
 A bein' a stravagant plenty
 Fer to make a honest bar'l o' meal,
 Is the dumdest, dingedest, darnedest,
 The all-firedest an' consarnedest
 Newfalutin nonsense men kin squeal!

With these roler-mills new fangled
 Millin's mighty mixt an' mangled,
 An' I'm tired o' so much "siontific laws"!
 It is theerry, talk an' slabber,
 It's a big no end o' jabber—
 Modern millin's mostly done with human jaws!

It was never did, I'm sartin!
 It's a lie from meet to partin',
 To make a bar'l o' meal from thet much grain!
 I am spilin' fer a quarrel
 With 4:20 to the bar'l—
 The men thet claims it hezn't got no brain!

Sixty year I've ben a grindin',
 An' it's only now I'm findin'
 Thet the fools is mostly livin' yit!
 An', I vum! They're mostly fillin'
 Places in the work o' millin',
 From the way they claim a bar'l o' meal they git!

Gentlemen, I'm a Hemlockviller,
 A reggulation ole-time miller,
 An' I know what I'm a talkin' abaout,
 An' I tell you plain an' squarely
 No 4:20 kin work fairly,
 Fer what a'n't in the grain kin not come aout!

My hull long experuns teaches
 Thet the man, or men, thet preaches
 Fer a bar'l o' meal from bushels less'n 6,
 Is a humbug, pure an' propper,
 An' should be throwed into the hopper
 Jes to larn him thet he's in an awful fix.

I will say agin with vigger
 Thet 6 bushels is the figger
 Fer us to put into a bar'l o' meal,
 An' thet burs kin knock the rolers
 From th' equator to the polars,
 An' steem-bilers a'n't wuth shucks aside the wotter-weel!

Hemlockville, Oregon.

SILAS STUMP.

POINTS IN MILLING.

MEN of a certain singular mental make-up seem to care to know where danger is merely that they may run the risk of tempting the danger. A good many men of this sort may be found in milling establishments. In the different departments they are always courting danger in some way. The other day I saw one of the lunatics of this danger-tempting class in charge of the motive-power in an important mill. His particular freak at the time of my visit was the desire and attempt to find out what pressure of steam his boiler could stand, and he had succeeded in pushing the gauge far up in the big figures. There was no call for extra pressure, and yet that man was experimenting on a freak that was likely to end in sending the whole concern up into the clouds.

ANOTHER human freak, of quite as dangerous a sort, I found in another mill. In this case the man with a hole in his head where the bump of caution ought to be located was given to the thrilling pastime of putting naked lights into dusty corners. Of course there was imminent danger that he might suddenly find a dusty spot in which the dust and air were in the proper condition to explode, but he did not seem to know that an explosion might kill himself and every body else in the mill. Nor did he seem to care. When remonstrance against his carelessness was made, he merely growled that "some people are mighty careful about small things and scared at nothing!"

PROBABLY such a man might learn something from a fair-sized and able-bodied flour-dust explosion that would end in a safe respect for explosives. The only trouble is, the careless lunatics of this class, if they are ever taught at all by experience, learn too late and always at the expense of others. If the explosion would only display good judgment,

focusing itself on the fool that causes it instead of wrecking the whole mill and killing every one in it, one might wish that the steam-daring and the dust-daring fools might be shocked by an explosion every time they commence freak-ing with danger.

WATCH your men, Mr. Owner and Mr. Superintendent. Wherever you catch one testing the boiler's strength, or speeding a machine beyond its rating, or exerting all his strength on a wrench in tightening a bolt, or poking a light into a dusty bin or room, or doing any other uncalled-for thing, run him into the bran-pile and smother him. He should be "put out" just as promptly as you would put out a fire.

WHEATS vary perceptibly in composition from year to year. Analysis shows a variation in starch in two consecutive years from 60.2 per cent. to 65.6 per cent., in albuminoids from 9.19 per cent. to 11.25 per cent., and in ash from 1.25 per cent. to 1.54 per cent. American wheat grown in two consecutive years has shown a variation in moisture from 9.83 to 9.88 per cent., in ash from 1.70 to 1.62 per cent., in fats from 2.21 to 2.06 per cent., in carbo-hydrates from 73.73 to 73.80 per cent., in woody fiber from 1.68 to 1.79 per cent., and in albuminoids from 10.85 to 11 per cent. These figures will make plain to the miller the variations in flour of which the consumer may from time to time complain. Unless the miller understands something of the chemical composition of his grain and knows how to make approximate calculations of some of the principal ingredients, he will be working in the dark most of the time.

AND there is still one "milling journal," so-called by mere courtesy, whose erudite editor believes that the short system is a failure, and that R. James Abernathy, of Kansas City, is "a Missouri short-system crank!" Well, well! But, after all, "the world do move," and there is no time in these busy days to waste on argument with men who believe or disbelieve. "Crank" is an easy word to use, but the men who use it most freely are not always the best qualified, either by intelligence, attainment, knowledge, or practical experience, to judge others. Mr. Abernathy needs no defense at my hands against the unintelligent and irresponsible scribblers who have vainly tried to write him down. He has impressed his ideas upon the milling industry of the United States too successfully to please certain manufacturers and their organ, and when they attempt to belittle his achievement they simply betray themselves and their organ. There is a short system in successful operation in hundreds of mills to-day, and the short-system idea is spreading. Primarily intended to answer the needs of the smallest mills, the short system has been found to answer the needs of large mills also, and the movement toward less elaborate milling has become strong and general in consequence. Of course that movement hurts certain interested concerns, but they must come to it. The millers of this age are accustomed to revolutions, and, having been pushed too far in a given direction, they are always ready, when sufficient reasons are presented, to halt and to retrace their steps. Meanwhile, it is only fair to assert that no mere "crank" with an impracticable fad could lead the intelligent millers of the United States to make expensive changes in system. The accusation of "crankism" is in this case too broad to stand. It carries its own refutation with it.

OUR GROWING CULTIVATED AREA.

A recent monthly report to the Department of Agriculture shows that the breadth of cultivated area increases very largely each season. In the newer States and Territories settlement is rapid, and each year new areas, almost equal to States in their aggregate, are given over to the plough, while in the older sections, east of the Mississippi River, new farms are carved out of hitherto undeveloped lands. The rapidity with which this extension has gone on in recent years is scarcely realized. In 1879 the four principal arable crops, corn, wheat, oats and cotton, occupied 128,000,000

acres; in 1888 this area had increased to 159,000,000, an enlargement in nine years of 31,000,000 acres. This increased breadth in four crops alone more than equals the entire area of the three Northern New England States, while the increase in three of the crops, corn, oats and cotton, exceeds the total area of the great agricultural State of Ohio. If the increase in all tilled and grass land has been in the same proportion as that in these four crops, we have now a total area of improved lands in farms of 356,000,000 acres, against 285,000,000 in 1879, or an increase almost equal to the total surface area of New England, New York and New Jersey, and equaling the entire area of improved land in 1880 in the eleven cotton States, with the addition of Delaware and Maryland.

ABERNATHEY ON BOLTING REELS.

One of the drawbacks to efficient flour-milling is the continued use of the hexagon reel. It filled its place so long, and so attached have some millers and mill-builders become to it, that it seems like parting with old and well-tried friends to let go of it. Nevertheless it must go. The greatest objection to it is its lack of capacity, and another is that it can not be made to bolt as smoothly and as clear as more modern reels. A good round centrifugal reel of any make has anywhere from two to three times the capacity, or even more, compared with a hexagon of the same length; and plain round reels without the centrifugal feature have much greater capacity, besides doing better work. The reason why the hexagon reel is not so good as the round reel is, or ought to be, apparent to every observing miller or mill-wright. The ribs raise the material to a point where it slides off, striking a section or square of the cloth in such a manner as to utilize but a part of it for bolting purposes, and hence the deficiency in capacity. The force with which the falling material strikes the cloth has a tendency also to force fine specks through. The latter objection may be theoretical in part, especially when the reels are running full. With a light feed, though, there is but little doubt of the fact that the result will be more "specky" than if bolted by a gentler process.

It is true the "specky" flour objection has frequently been urged against the use of the centrifugal reel, or at least was, before centrifugals were brought to their present state of perfection. The original centrifugal was a six or eight-sided reel with an internal cylinder running at a very high speed. All that has been changed, and, so far as is known to the writer, every maker of centrifugals uses round reels without ribs of any kind; and in most if not all cases speed has been materially reduced, so that the work of all can be depended on to be smooth and clear. There is a variety of what is called the inter-elevator reels, for which a great deal is claimed for efficiency and rapid bolting, some of which undoubtedly come up to the claim, and all of them are superior to the common hexagon. The intention of the inter-elevator reel is to keep a larger amount of the cloth constantly at work, by raising the material on floats or buckets attached to the arms of the reel and gently sliding it off on to the cloth at points that could not be reached if the material were left free to tumble around on the bottom of the reel, as by the old method. One peculiar convenience about all such reels is that they can be made to fit any chest and go on the shafts of all common reels without doing any tearing out, except merely to strip the shafts of arms and ribs.

Whether or not the inter-elevator reel possesses much greater bolting capacity than a plain round reel, is a question users must decide for themselves, but none should be long in deciding to replace hexagon reels with round reels, if they have to make them at the mill, which in some cases may be cheaper than to buy them. By exercising a little skill and care, an old six-sided reel can be changed to a round reel without very much expense. First procure a set of hoops made of number 8 iron, or for small reels number 12 iron may do. These hoops should be made very round and uniform in size, with the in edges hammered to nearly a feather edge, or at least the edge intended to go next the head of the reel against which the material strikes in its

passage through the reel. However, it is but little more trouble to bevel both edges, when the hoop can go on the reel either way and be right. The hoops must be carefully lapped with cloth, thin cotton flannel, stitched in such a way that it will be sure to remain in place. The best way is to use narrow strips and wind them around the hoops spirally. It may not be easy for those remote from shops of any kind, other than the country blacksmith shop, to provide themselves with hoops of that kind. In such cases it would be better to send to some manufacturing establishment for them, giving the diameter and stating for what purpose they are to be used. I think that any mill-machinery house can now furnish them without difficulty. The hoops should be about one foot apart when placed on the reels.

The hoops procured, the next thing will be to make the reel to fit them. To do that the ribs must be removed and the arms shortened, so that the diameter of the reel would be reduced about 4 inches; or reduce a 32-inch reel to 28 inches in diameter, provided it were to remain in the same form. The ribs must then be put back on the arms substantially as in the first place. The head must then be changed, or the inside of it, to which the cloth is fastened, to a circular-shape 32 inches in diameter, or whatever the size may be intended. That can be done by carefully stripping or filling out the old head with circular segments fitted on the square. It should, though, be very carefully done to make sure that it be true and exactly round. In each of the ribs short arms or studs must be placed at intervals of about a foot. These studs will have to be two inches long when finished, but should be more when put in, so as to allow for cutting off to a straight line and true circle corresponding with the head and tail circles. The latter should be made of wood, the inside of which should snugly fit the head circle, or be exactly 32 inches in diameter, with depth of rim enough to form a speck-box flange.

The tail-studs should then be cut off to fit this circle; that is, a shoulder should be cut on them, allowing a lap to project outward to which the circle can be fastened with screws. The tail-studs should be square and made of strips about two inches wide and one inch thick. The other studs can be round and about an inch in diameter, or square and same size, as may be most convenient. An inch in width will be sufficient for the hoops. To the fixed tail circle the cloth can be fastened by tacking in the ordinary way; or an independent circle can be fitted to the outside of the tail piece and attached with stud-bolts in such a manner that it can be drawn to the fixed piece or away from it to take up the slack in the cloth. Such a device will prove convenient in keeping the cloth taut. In cutting the tail-studs to fit the tail circle, simple rule measurement should not be depended upon, but a rest fixed and a true circle, corresponding with the head circle, made by sweeping the reel around and making each stud strike the point of a scratch-awl which rests in a fixed place. That part being neatly and carefully done and the tail circle fastened to the studs, the intervening studs can be marked for cutting off by a carefully made straight-edge, reaching from head to tail or reel. If head and tail circles are true and at equal distances from the center at every point, as is insisted upon and should be in all such cases, the method described will make a reel exactly correct from end to end, both as to straight lines and circles, and can not help making a very smooth and nice working reel.

As will be readily understood, the iron hoops already provided are to be supported by the intermediate studs, and the thickness of the hoops must be allowed for in cutting them off, so that the hoops will fit them snug and tight. The hoops must be fastened to the studs with small screws, the heads of which must be covered with the cotton flannel to prevent them from coming in contact with the bolting-cloth. Now I know some difficulty will be experienced in getting all the hoops so uniform in size as this plan suggests; but if a determined effort to have them so is made, very near perfection will be reached. The cloth will be put on the reel in substantially the same way as on the old one. Any old cloth that is good can be used for the new reels, and, in fact, an old cloth that is in good condition can be

used entire if the round reel has been made to suit. Of course, using the old cloth with its half dozen strips of ticking greatly reduces the bolting capacity of the reel: still, it will have much greater capacity than the hexagon reel, and when the cloth is worn out a new solid cloth can be obtained with no ticking except where the seam comes, which will still further increase the bolting capacity of the reel.—*R. James Abernathy in "The Mechanical News."*

FLOUR AND OTHER HUMAN FOODS.

According to the Lomb prize essay on "Healthy Homes and Foods," the vital elements or constituents of the latter are not numerous, and may all be embraced in the following counts, namely: 1. Albumens or proteids. 2. Fats or oils. 3. Starches or carbohydrates. 4. Inorganic or mineral salts. 5. Water. To the albumen or proteid group belong some of the most important food stuffs. They all contain nitrogen, and for this reason the term "nitrogenous constituents" is used sometimes instead of proteids or albumens. The chief proteids are ordinary albumens, as the white of egg, casein of milk, fibrine of meat, gluten of grains and flour, and legumine of peas and beans. The amount of proteid in the different foods is variable; thus, meat contains from 15 to 23 per cent.; milk from 3 to 4; peas and beans from 23 to 27; grains and flours from 8 to 11; bread from 6 to 9, potatoes and greens from 1 to 4. When we remember that the blood, muscles and all the vital organs contain proteids as their chief constituents, we can understand the importance of taking food rich in one or more members of this proteid group. The average workingman requires in his daily food the equivalent of four or five ounces of pure proteid. The fats or oils, animal and vegetable, when oxidized or consumed, produce more force than will arise from the combustion of an equal weight of any other food stuff. In cold countries the inhabitants instinctively consume very large amounts of fat on account of the heat which is generated from it. The workingman requires not less than two ounces of fat per day. Fats are best digested when taken in a finely divided state.

To the group of starches or carbohydrates belong a number of well-known substances of similar chemical composition, a majority of which pertain to vegetable foods; the most important are starch, sugar, gum and dextrine. Like the fats, they are consumed in giving energy to the body, though a much larger amount of the carbohydrates is required to yield the same result. The daily need of this food stuff by the average workman is between 17 and 18 ounces. The cellulose or cell structure of plants is closely allied to the members of this group, and any cellulose that is absorbed or assimilated must first be converted into sugar. Concerning the group of inorganic or mineral salts, it may be observed that the bones of the adult man contain as much as 70 per cent. of mineral matter, the greater part of which is the phosphate of lime. Smaller quantities of the phosphate of magnesium and the carbonate of lime also exist in blood. The muscles, blood and tissues also contain salts of potash and soda and some iron. One of the most important mineral foods is common salt or chloride of sodium; but the quantity needed for daily consumption, and of the alkalies, such as soda, is inconsiderable.

Water, though commonly regarded as possessing no nutritive qualities, is in reality the most important of all the food elements that sustain and perpetuate life. About 70 per cent. of the adult body is water. It forms the greater part of the vital fluid, in which it serves as the carrier of other substances, some in solution, others held in suspension. Besides the fluids, the solid tissues contain a greater or less proportion of water; the muscles contain as much as 75 per cent. There is also great loss, or rather use, of water by evaporation from the skin, by exhalation from the lungs and by excretion from the kidneys and bowels. This loss must be made good by the drinking of water and by taking foods more or less rich in this constituent. Meat contains about 85 per cent.; milk on an average 87; bread 35; and vegetables and fruits from 70 to 90 of water. The quantity of this fluid needed per day by a laboring man it is impossible

to estimate, as it varies greatly with circumstances, the temperature of the weather, humidity of the atmosphere and kind of labor, and is taken in many and varying forms in food supplies of every description. To say nothing of the inorganic or mineral salts and water, the cost of which are merely nominal, the average workingman requires daily in his food, in round numbers, not less than four ounces of proteins, two ounces of fat and eighteen ounces of carbohydrates.

What combination of foods will furnish these for the least money? This is an important question, but it should always be borne in mind that the foods suggested are healthy ones. A combination which would cost but little, but which would lead to dyspepsia or other ills, might in the end be quite expensive. It has been definitely determined, both by experience and science, that certain varieties of foods are richest in these vital elements, and are therefore most valuable, and such as contain the most of them, at a given price, are, as a matter of course, the cheapest, and will go the farthest toward sustaining life, health and strength. As a practical illustration we append two of the daily rations from the prize essay, of the many given, with the per cents. of their proteids, fats and carbohydrates, and approximate cost of ration aside from cooking, which would be but a slight item if any considerable number were to be cooked for:

Foods.	Proteids. oz.	Fats. oz.	Carbohy- drates, oz.	Cost—Cents.
26 oz. bread.....	.82	0.13	14.35	5 at 5c. per loaf.
2 oz. sausage.....	0.57	0.80	....	1½ at 12c. per lb.
2 oz. oatmeal.....	0.29	0.12	1.30	½ at 4c. "
4 oz. beans.....	0.92	0.08	2.14	1 at 4c. "
1 oz. bacon.....	0.14	0.37	....	¾ at 12c. "
1 pt. milk.....	0.54	0.57	0.76	3 at 6c. per qt.
1 oz. butter.....	....	0.83	....	1½ at 24c. per lb.
1 oz. sugar.....	....	....	0.94	½ at 8c. "
3 5-oz. cups tea.....	....	....	....	1 at 75c. "
	4.28	2.90	19.49	14½
16 oz. bread.....	1.12	0.88	8.53	3 at 5c. per loaf.
2 eggs.....	0.24	0.24	....	4 at 24c. per doz.
2 oz. butter.....	....	1.66	....	3 at 32c. per lb.
1 qt. milk.....	1.08	1.14	1.52	8 at 8c. per qt.
1 oz. bacon.....	0.14	0.37	....	¾ at 12c. per lb.
1 oz. string bean....	0.03	....	0.06	2 at 32c. per lb.
8 oz. mutton.....	1.36	0.48	....	9 at 18c. per lb.
32 oz. potatoes.....	0.64	....	6.62	2 at 60c. per bu.
1 oz. sugar.....	....	....	0.94	½ at 8c. per lb.
1 oz. dried fruit....	0.02	....	0.55	1½ at 20c.
	4.63	3.97	18.52	33½

WHEAT CULTURE IN CALIFORNIA.

Concerning the methods and costs of growing wheat in California, a San Francisco correspondent of "The Cultivator and Country Gentleman" writes as follows: First, let us take the ranch during the seeding season. It consists of between 4,000 and 5,000 acres of nearly level land, of a sandy loam and reddish clay nature. Part of it is what is known here as "hog-wallow"; that is, the surface is uneven and made up entirely of hillocks and hollows, just as if some prehistoric porkers of phenomenal size had used it for wallowing and left the surface as uneven as the ocean in a stiff breeze. Such land is very difficult at first to cultivate. Going out into such a field last December, here is the sight I saw: A powerful traction engine was making trips back and forth. The soil was soft from recent rains, but the two driving-wheels of the engine had a surface of four feet each, and upon that surface were corrugations of angle iron which kept the wheels from slipping, while a large surface prevented them from sinking into the ground. Extending from the engine to the rear were several chains, to which were attached no less than five gang-plows of four shares each. These gangs were coupled together with chains, and as they went about the field they turned twenty furrows at once without missing an inch of ground. Indeed, it would be impossible to plow more evenly or perfectly with the aid of teams. Just behind the gangs was attached an apparatus for leveling the "hog wallows," and so effective is it that in two seasons' use these hillocks are obliterated. Behind this are the harrows, with seeders attached.

Thus the entire operation of plowing, leveling, sowing and harrowing is performed at one time. The field needs to be gone over but once. Five men are necessary to operate the machine. First, there is a steersman, who has a post in front and guides the machine with a wheel placed horizontally like that on a brake-rod; there are an engineer and a fireman, who attend to keeping up steam and to seeing that the plows are working all right; another man drives a wagon, which supplies the engine with fuel, and still another brings water to the engine. The fuel used is threshed straw from the preceding crop, so that there is no expense on this score. The engine is not stopped for fuel or water, but the wagons are driven alongside, their loads are transferred, and the engine keeps right along about its work; neither does it stop when nightfall comes. Two large locomotive headlights are rigged up, one in front and one behind. Another set of hands step on board, and the engine and plows keep right along about their business, stopping for nothing. Hardly an hour out of the 24 is lost during seeding-time. Nowhere else in the world can such a sight as this be seen. No wheat-farmer ever dreamed before of the possibility of plowing night and day! In this way from 60 to 80 acres of land can be gone over thoroughly in 24 hours. The engine used is of 30-horse-power and weighs 15 tons. The wheels are 6 feet in diameter and 4 feet on the surface. The entire outfit for wheat-growing, including plows, leveler, seeder, combined header and thresher and engine, cost the inventor \$7,000. It is possible, when the soil is in exactly the right condition, to add two more gangs to the five without reducing the rate of speed of the engine. But if the soil be either too wet or too dry, this can not be done. So much for the seeding.

The harvesting is hardly less interesting. When the grain has attained maturity, an immense combined header and separator is attached to the side of the engine, and the machine is turned loose in the grain field. This of course requires more hands to operate than does the plow. A swath forty feet wide is cut at each round of the field, and from 90 to 115 acres can be harvested each day between sunrise and sunset. In order to make so wide a cut, the sickle-bar has a joint in the center so that any unevenness of the surface does not prevent the grain from being cut. The wheat pours from the separator into sacks, which are quickly sewn and thrown off the machine, to be gathered by following teams. It may be objected that in such harvesting as this there is danger of loss, but that is not so. A series of experiments has demonstrated that a larger quantity of grain will be secured when harvested and threshed at once, than when put into stack and threshed afterward. The inventor and operator of these machines has kept a careful record for three years of the actual cost of raising wheat and putting it on shipboard. From Visalia to Port Costa, where rail and ship meet, is a distance of some 250 miles by rail. All grain in California is put up in sacks, holding from 100 to 120 pounds each, and which cost from seven to eight cents each. Taking every expense into consideration, interest on cost of land, labor at good rates, high freight rates, sacks and every item, for three years the operator of these machines has put his wheat on the wharf at Port Costa for a fraction less than 30 cents a bushel.

THE American canal at Sault Ste. Marie is to have a new lock, which will be the finest in the world. It will be 800 feet long and 100 feet wide, with 20 feet of water on the miter sill. When it is finished four large boats can be locked through at the same time. The present lock is 515 feet long and 80 feet wide, with 17 feet of water on the sill. The two locks first built were 350 feet long and 70 feet wide, with 13 feet of water on the sill. At that time the locks were laughed at and the expenditure was thought to be a useless one. It soon became necessary to make the lock 100 feet longer and that proving inadequate, the canal was made 65 feet longer. Yet that is now too small. In their day the old locks were the finest in the world, just as the new lock will be the grandest ever built. Its walls will be straight, so that vessels can enter alongside instead of the steamer enter-

ing first, as now. This will save a great deal of time, the gates being the full width of the lock. There will be two solid walls of the heaviest kind of masonry, a quarter of a mile long and forty-four feet high, and proportionately wide at the bottom. The lock is planned to the limit of lake carriers, for twenty feet will always be the limit in draught of lake carriers because of Lake St. Clair.

MILLING PATENTS.

Among the patents granted June 4, 1889, are the following:

James F. Wilson, Orange, New South Wales, Australia, No. 404,456, a grain-cleaning machine.

Wm. H. Smith, Hickman, Tenn., No. 404,571, heating and steaming grain.

John C. Dell, Philadelphia, Pa., No. 404,607, a runner for grinding-mills.

Jesse Warrington, Indianapolis, Ind., No. 404,810, a bolt-ing-reel.

BAYARD TAYLOR'S FAMOUS BOOK.—"Views Afoot or Europe Seen with Knapsack and Staff, by Bayard Taylor," the most popular book of travel ever published by an American author, of which large editions have been sold at \$1.50, is now published in a handsome big-type cloth-bound volume of 481 pages at the remarkably low price of 50 cents, or three copies for \$1.10, post-paid! This price is to continue till July 1, only. It is one of Alden's "Literary Revolution" schemes to attract attention to his large catalogue of standard books. He ought to sell a million copies! No traveler ever saw more than Taylor or told his adventures in more vivid language. His pen-pictures are charming, his book an American classic. Aside from its literary merit this story of the plucky lad who was determined to see Europe with or without means serves as an inspiration to all young men to rise above their surroundings and make a like success of life. You may order the book direct or through any bookseller or newsdealer. John B. Alden, Publisher, New York, Chicago, or Atlanta.

The San Francisco *Commercial Herald* of May 16 contains the following paragraph on the wheat prospects in that state: "We are now about a month away from the harvest, and if no rains productive of rust come we may expect the largest crops of wheat and barley ever reported in the state. With 3,600,000 acres the reported acreage, the outcome of wheat would not be less than 72,000,000 bushels, or 2,160,000 short tons, and as some think might be more. The general disposition is in the direction of exaggeration, and the popular estimate of a 2,000,000-ton crop may be safely accepted at present. Of this, 1,600,000 tons would be available for export. The extent of the barley crop is a matter of less certainty. It will, however, be at least 60 per cent. in excess of 1888. Low prices will probably prevail for both, but the quantity will much more than make up for the lower prices."

SPECIAL NOTICES.

LIBERAL OFFER.

With a view of increasing our subscription list, we will send a copy of R. J. Abernathy's new book, "The True Short System" (Price \$2.00) and "The Milling World" for one year at the very low price of Two Dollars. Renewal will be treated same way. This offer will only continue for a limited time. Now is your chance. Send in your subscriptions at once.

Address,

THE MILLING WORLD, BUFFALO, N. Y.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,
Columbus, Ohio.

Office and Factory, 5th Street, north of Naughten.

TOLEDO MILL PICKS AND STONE TOOL MFG. CO.

Manufacturer

and Dresser of

MILL PICKS.

Made of the best double-refined English cast steel. All work guaranteed. For terms and warranty, address, GEO. W. HEARTLEY, No. 297 St. Clair Street, Toledo, Ohio. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF

Shafting, Pulleys, Hangers, Coupling, Machine and Jobbing, Etc., Etc.



NEW APPLICATION OF PLASTER.—A new process of hardening plaster, so as to make it available for the construction of floors in place of wood, has been brought before the French Academy of Science by M. Julte. A mixture of six parts plaster of good quality and one part of finely sifted, recently slacked white lime is employed like ordinary plaster. After it has become thoroughly dry, the object manufactured from it is saturated with a solution of any sulphate whatever whose base is precipitated in an insoluble form by lime. The sulphates especially recommended for the purpose are those of iron and zinc. In order to obtain the maximum of hardness and tenacity, it is necessary to temper the limed plaster well in as brief a space of time as possible, and with no more water than is strictly necessary.

GENERAL NOTES.

THE most eastern point of the United States is Quoddy Head, Me.; the most northern point is Point Barrows, Alaska; the most western is Alton Island and the most southern Key West. Working from these four points, many will be surprised when they locate the geographical center of the United States.

COTEMPORARY COMMENT.

One of the journals of the milling trade is doing all that can be done on paper to cause disorganization, dissatisfaction and friction in connection with the national organization. It is all very right and proper for any one to say or do any thing in connection with this or any other general body, where their motives are influenced by principle or a regard for the general good of the people whom they pretend to represent. It is very wrong and very narrow for a public organ to attack a prominent individual, who is identified with an organization of this character, for personal reasons which are peculiar to the journal itself.—*Indianapolis "Millstone."*

There is a reason for the belief that a combination of brokers exists in Toronto, with the object of lowering the price of offal. This object has succeeded so well that the price at present is about \$8 per ton, exactly half the figure for which it sold little more than a year ago. The price of offal reflects to a very large extent the condition of the milling business. When the price is high the miller as a rule will be found to be prosperous; and *vice versa*. It is estimated that a drop of one dollar per ton in the price of offal means a loss of three cents on each barrel of flour manufactured.—*Toronto "Electrical, Mechanical & Milling News."*

INTERESTING GRAIN STATISTICS.

Statistician Dodge in a recent review of the situation says that rye is the bread-grain of Eastern and Central Europe, and that of this grain Russia alone produces many more bushels than the United States produce of wheat and rye together. Russia exports half as much rye as the United States export. Europe uses about 4 bushels of wheat per capita each year, of which only half a bushel is imported, or only about as much as is needed for seeding the domestic area. With rye continuing as the staple bread-grain, the outlook for forcing more wheat upon Europe is considered very unpromising. "No amount of advertising," says Mr. Dodge, "no proffers of reciprocal trade, no change of fiscal policy can force upon Europe another peck per capita, scarcely another quart, for many years to come, unless some unexpected disaster shall befall domestic crops. The small deficiency exists now only in the countries of Western Europe and mainly in Great Britain. If the surplus of Eastern Europe should be distributed only in Continental countries,

it would nearly supply all deficiencies, leaving practically only Great Britain to receive the imports of other continents, to consume alone the surplus of the wheat markets of the world."

Mr. Dodge gives figures showing the production of wheat in Europe during the last ten years and calls attention to the fact that there seems to be no material decline. "The average," says he, "represents a wheat supply almost sufficient for the wants of Europe, about twice as much as is produced in North and South America, and more than half of all that is grown in the world." Mr. Dodge's tables are especially valuable, since they present the average imports and exports of agricultural products of each country for the last ten years. The figures for any one year would be misleading. During the period from 1877 to 1886 the average net imports of wheat into Europe per annum were 203,000,000 bushels, of which the United States sent 95,000,000, or nearly half. Russia supplied 71,000,000 bushels. Great Britain received half the net imports; France 43,000,000 bushels; Germany 14,000,000 bushels; Belgium 15,000,000, and the other countries much smaller amounts. The average value of these net imports of wheat was \$1.33 per bushel. The average value per barrel of the net imports of flour was \$6.00. The average net imports of oats into Europe during this period was 86,500,000 bushels, of which Russia supplied 48,000,000 and the United States only 2,000,000. Sweden supplied 14,000,000. In regard to barley a curious fact is presented by the table. Only two European countries, Germany and Great Britain, import as much as the United States. "The deficiency of Great Britain," says the report, "is the greater part of the aggregate, and the Continental countries together have a surplus and spare enough for about three-fourths of the needs of Great Britain. Practically all the barley consumed in Europe is grown there, except that received from Canada."

DIVIDING THE GREAT FARMS.

Bonanza farming in Dakota will soon be a thing of the past. According to a dispatch from Hillsboro, in that Territory, dated June 2, the Grandins, who have about 100,000 acres in the Red River valley, two weeks ago placed their land on the market, and they have already sold over \$100,000 worth. The lands are being sold at from \$20 to \$30 per acre. They take in payment one-half of the crop each year, at its market value, until the lands are paid for. In no case will they sell to exceed 640 acres to one man, and they prefer to sell in 160 to 320 acre lots. This plan does not yet extend to their improved land, of which they have 22,000 acres near Hillsboro and 8,000 near Maysville, but only to the wild land. If the plan works well, this is the beginning of a breaking up of the large farms in North Dakota and is looked upon with favor. It gives to the country a class of well-to-do farmers, whose every interest is in the country, who become patrons of the schools and churches and have an interest in social and political affairs beyond mere pecuniary interest. The Grandins bought North Dakota bonds as an investment when they were put on the market by Jay Cook, and their lands cost them \$4 per acre, while the majority of purchasers of Red River Valley Railroad lands purchased bonds at from eleven to thirty cents on the dollar, getting their lands at from 60 cents to \$1.20 per acre. It will be seen that the Grandins are getting their original investment back, with interest and a very large margin besides.

SOME months ago F. H. Peavey & Co., of Minneapolis, organized the Pacific Coast Elevator Company, with a capital stock of \$750,000, for the purpose of building elevators along the line of the Oregon Railway and Navigation Company, with a huge central elevator in Portland. About thirty of these will be built at the chief shipping points on the various lines of that road, with capacities varying from 25,000 to 75,000 bushels, and the terminal one at Albina, on the river opposite Portland, with a capacity of 1,000,000 bushels. Work on these structures is now in progress, and it is expected to have them ready for the new crop on August 1.

COMPOUND Condensing or Non-Condensing.
16 SIZES, 5 to 500 H. P.
Not yet equaled by any form of Engine for
HIGH FUEL DUTY AND SIMPLICITY.

STANDARD 13 Sizes in Stock.
5 to 250 H. P.
3000 in use in all parts of the Civilized World.

JUNIOR 6 Sizes in Stock,
5 to 50 H. P.
An Automatic Engine cheaper than a Slide Valve.
WELL BUILT. ECONOMICAL. RELIABLE.
Over 300 Sold the First Year.

All the above built strictly to Gauge with
INTERCHANGEABLE PARTS.
REPAIRS CARRIED IN STOCK.
SEND FOR ILLUSTRATED CATALOGUES.

WESTINGHOUSE
ENGINES

The Westinghouse Machine Co.
PITTSBURGH, PA. U.S.A.

SELLING DEPARTMENT IN THE UNITED STATES.

New York,	17 Cortlandt St.	Westinghouse, Church, Kerr & Co.
Boston,	Hathaway Building,	
Pittsburgh,	Westinghouse Build'g,	
Chicago,	156, 158 Lake St.	
Philadelphia,	608 Chestnut St.	M. R. Muckle, Jr. & Co.
St. Louis,	302, 304 Washington Av.	Fairbanks & Co.
Kansas City,	312 Union Avenue,	
Denver,	1330 Seventeenth St.	
Omaha,	1619 Capitol Avenue,	T. C. Ayer.
Pine Bluffs, Ark.		Geo. M. Dilley & Sons.
Salt Lake City,	259 S. Main St.	Utah & Montana Machinery Co.
Butte, Mont.	L. Granite St.	
San Francisco,	21, 23 Fremont Street,	Parke & Lacy Co.
Portland, Or.	33, 35 N. Front St.	Parke & Lacy Mch. Co.
Charlotte, N. C.	36 College St.	The D. A. Tompkins Co.
Atlanta, Ga.	45 S. Prior St.	
Dallas, Tex.		Keating Imp. & Machine Co.
Chattanooga, Tenn.,		G. E. James & Co.



CAMERON STEAM PUMP

THE STANDARD OF EXCELLENCE.
SIMPLE! COMPACT! DURABLE!
"NO OUTSIDE VALVE GEAR."

Steam, Air & Vacuum Pumps in Every Variety

FOR ILLUSTRATED CATALOGUE ADDRESS

THE A.S. CAMERON STEAM PUMP WORKS

Foot of East 28d Street, - New York.



BURNHAM'S NEW IMPROVED STANDARD TURBINE WHEEL
PATENTED MARCH 27, 1883.
and MAY 1, 1888.
ADDRESS YORK PENN.
FOR PRICE 8c & c.



THE CURTIS

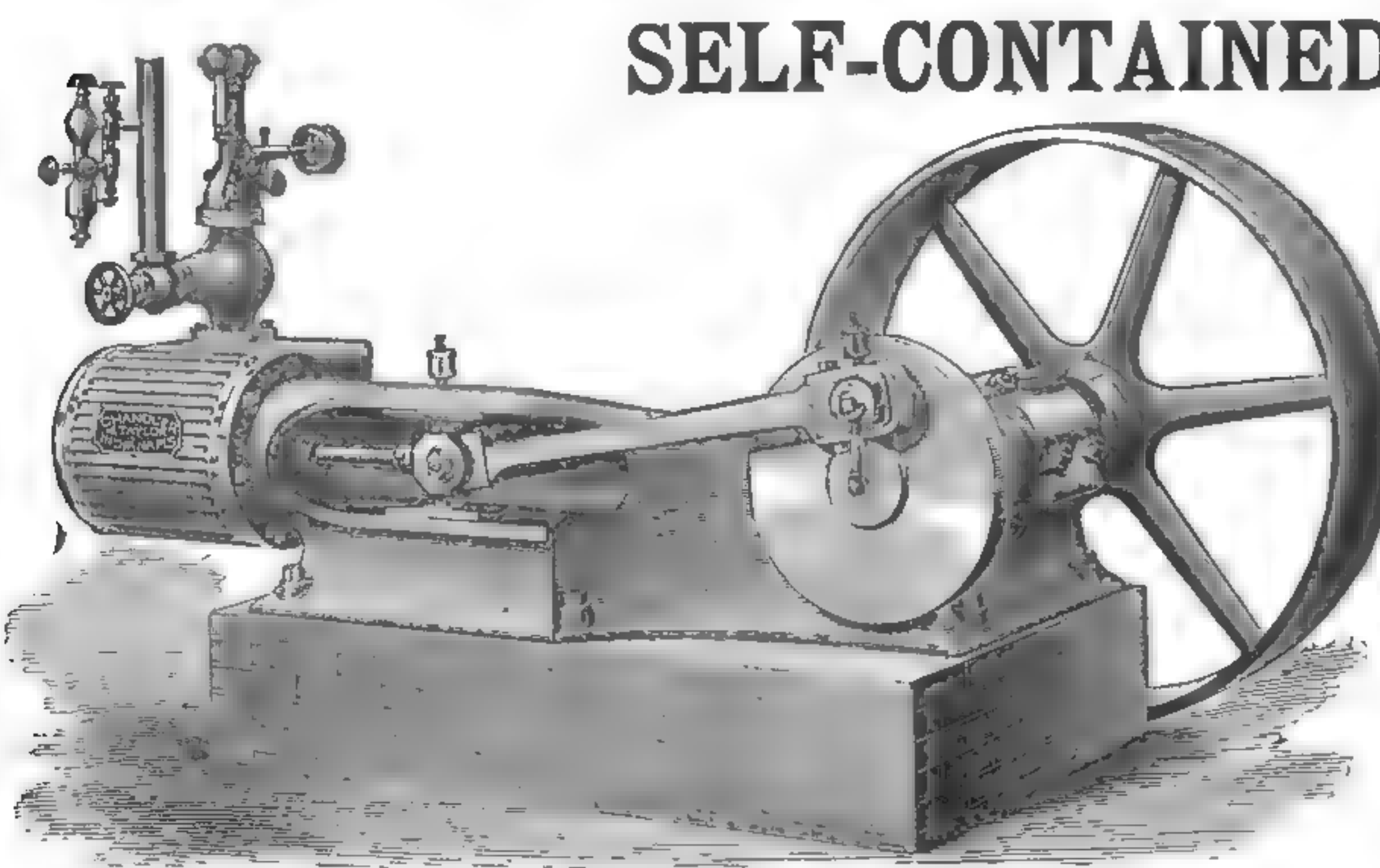
PATENT RETURN STEAM TRAP.

It is noiseless, positive, rapid, will return all condensation back into the boiler, and works equally well in connection with reduced pressure or exhaust steam, also when the return is below the water line of the boiler.

THE CURTIS REGULATOR COMPANY,
NO. 74 BEVERLY ST., BOSTON, MASS.

GENERAL AGENCIES.

NEW YORK, 109 Liberty st.	CHICAGO, 218 Lake st.
PHILADELPHIA, 2035 N. Front st.	ST. LOUIS, 511 WALNUT ST.
MINNEAPOLIS, 210 S. Third st.	NEW ORLEANS, 21 Union st.



SELF-CONTAINED STEAM ENGINES

Stationary or Semi-Portable.

High Standard Maintained.
Prices Greatly Reduced.

WRITE FOR NEW ILLUSTRATED CATALOGUE NO. 32.

Chandler & Taylor Co.

Indianapolis, Ind.
Engines, Saw-Mills and Drain Tile Machinery a Specialty.

NOTES & NEWS

W. H. Gilbert's mill, Adrian, Minn., burned.
 J. Reynolds, Fordsville, Ky., remodels to rolls.
 Caspar Schmidt, miller, Oshkosh, Wis., is dead.
 Morison Bros., Mt. Olivet, Ky., remodel to rolls.
 R. Hardesty's grist-mill, Galesville, Md., burned.
 T. K. Martin, Onancock, Va., builds a grist-mill.
 Jos. Scott, Lickville, S. C., enlarges his flour-mill.
 Rice & Blessing, Buckeystown, Md., remodel to rolls.
 T. Crymes, Williamston, S. C., enlarges his flour-mill.
 J. L. Stodghill, Mt. Eden, Ky., improves his flour-mill.
 M. V. Barkley, Piedmont, S. C., enlarges his flour-mill.
 M. L. Reid's grist-mill, Best, N. C., burned; he rebuilds.
 S. & T. Chambers' grist-mill, Guntersville, Ala., burned.
 Dorman Bros., Prairie Grove, Ark., rebuild their grist-mill.
 J. Able & Co., Gordon, Tex., are building a \$20,000 roller mill.
 Newberry & Callaghan, Newberry Mills, Va., refitted with rolls.
 J. A. Smith & Co., Knoxville, Tenn., increase flour-mill capacity.
 The Kaufman Milling Co., St. Louis, Mo., build a \$21,000 elevator.
 M. P. Wingrove, French Creek, W. Va., wants grist-mill machinery.
 M. Philen's grist-mill, Lower Peach Tree, Ala., burned; loss \$1,000; re builds at once.
 Rev. J. Thomas, Bridgewater, Va., sold his flour-mill to Coyner & Stover for \$2,500.
 Jameson Bros.' corn-mill and elevator, Stella, Neb., burned; loss \$9,000; insurance \$4,500.
 Geo. Richner & Co.'s mill and elevator, Ashfield, Ill., burned; loss \$10,000; insurance \$1,600.
 W. G. Bell, Lawrenceburg, Tenn., has leased and will improve and operate the Nixon flour-mill.
 Jas. Rigby, Pulaski, Va., has bought a flour-mill at Ronald, Va., which he will improve and operate.
 Dalrymple & Shrubsole's Lynn Valley grist-mill, Simcoe, Ont., burned; loss \$8,000; insurance \$5,500.
 The Farmers & Merchants' Flour Mill, Sulphur Springs, Tex., has been sold to Gun & Ashcroft for \$10,000.
 The J. B. Allfree Co. have taken a contract from Tobrock, Aldenhagen & Co., Waymansville, Ind., to build them a 50-barrel mill, including all the Allfree machinery.
 The J. B. Allfree Co. have taken a contract for W. J. Meyers & Bros., of Princeton, Ky., to build a 75-barrel mill at Troy, Tenn., including the "Keystone" Rolls, "Success" bolters, Allfree purifier, "Climax" brand-duster, &c., and an Allfree automatic engine and complete power plant and corn-meal outfit of the Allfree manufacture.
 Following is a table showing the imports of flour and grain into Buffalo, by lake, for the month of May, and from the opening of navigation to May 31, 1889, compared with those for previous years:

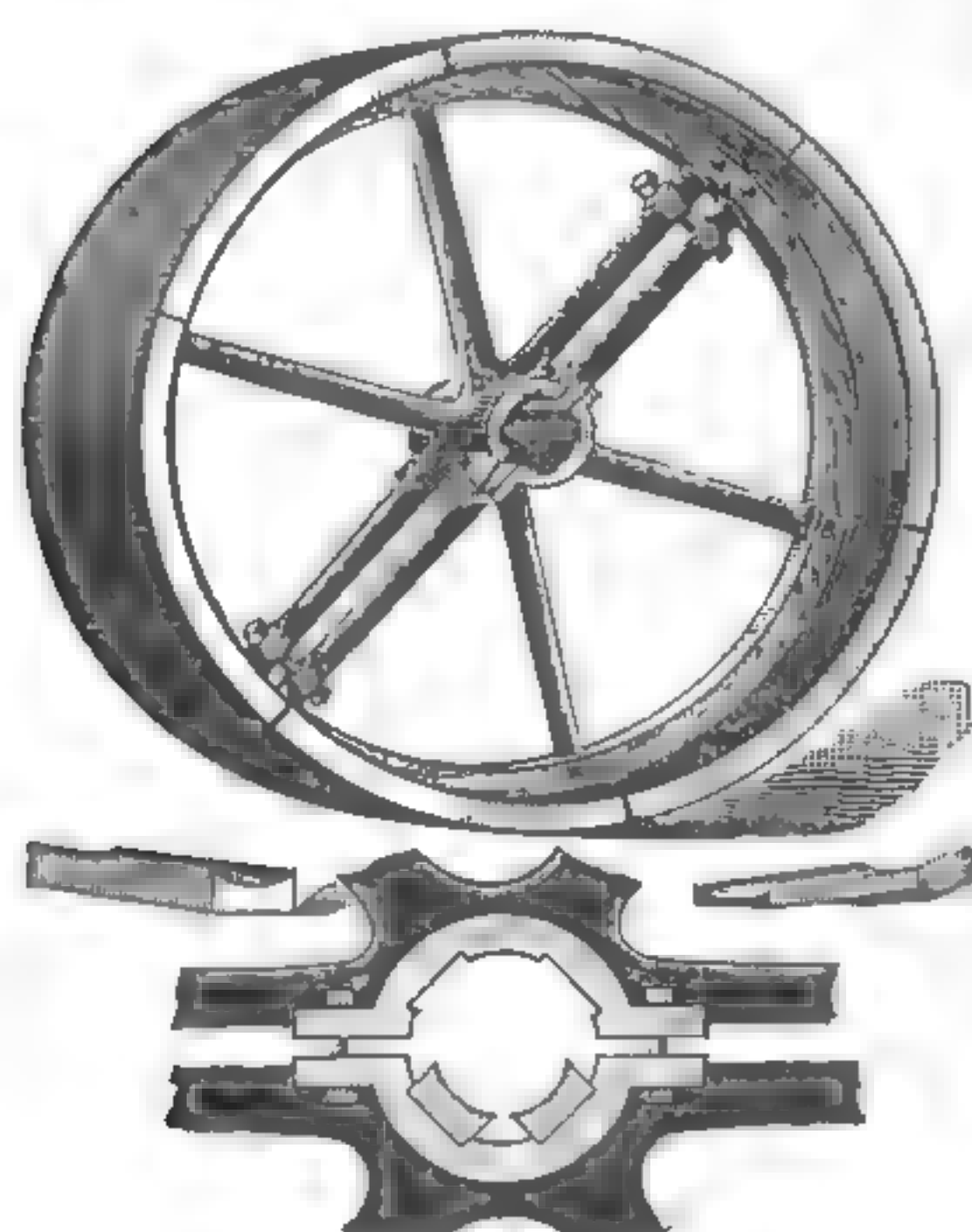
FOR THE MONTH OF MAY.			
	Flour, bbls.	Grain, bu.	Grain, inc. Flour, bu.
1889.....	476,443	10,708,038	13,090,253
1888.....	599,970	11,200,061	14,199,911
1887.....	542,335	12,769,501	15,481,176
1886.....	552,479	11,486,484	14,248,979
FROM OPENING TO MAY 31.			
	Flour, bbls.	Grain, bu.	Grain, inc. Flour, bu.
1889.....	695,188	15,742,164	19,218,104
1888.....	599,970	11,200,061	14,199,911
1887.....	565,785	15,543,896	18,372,821
1886.....	659,507	14,945,306	18,242,841

Superintendent of Census Robert P. Porter announces that it is important to the country that the returns in relation to farm products and live stock should be full and correct. The enumerator, in the house to house visit he will make during the month of June, 1890, is constantly met with the fact that farmers keep no books, and hence the returns are not infrequently guess-work. The census year begins June 1 next and ends May 31, 1890. If farmers throughout the country would note this fact and keep account of the products of their farms during the census year it would be of material aid in securing reliable returns for the Eleventh Census.

BOOKS AND PAMPHLETS.

Good Housekeeping, in No. 107, just out, makes the welcome announcement that Catherine Owen, who has been compelled to rest from writing for a considerable time on account of illness, has recovered her health and has resumed work, and that a serial written by her for *Good Housekeeping* will be started soon under the title, "Helps to Young Housekeepers Over the Hill of Difficulty." Mrs. Owen's writings are among the standards in the new and valuable housekeeping literature that has been created in the present generation of experimental science and art in the household. They are terse, understandable, and while embodying all that progressive experience has taught, are adapted to the practical daily use of the housekeeper. *Good Housekeeping* readers will know how to rejoice over this addition to the rich contents of their indispensable journal.

In the June *Century* Mr. Kennan begins his account of his most important investigations made by him into the Exile System, viz., his visit to the Convict Mines of Kara. The frontispiece of this number of *The Century* is a portrait of the famous French artist, Corot. The article is by Mrs. Van Rensselaer, and along with the letter-press is another portrait of "Corot at Work," drawn from a photograph by Wyatt Eaton. A number of Corot's paintings are also given. The wood engravings are interesting as specimens of American reproductive work of this kind. They are all by Mr. Eldridge Kingsley. An article by an English writer on "The Bloodhound" is accompanied by wood engravings from sketches by an English artist. Mr. DeKay continues his Irish papers with a curiously illustrated article on "Early Heroes of Ireland." "Certain Forms of Woman's Work for Woman," by Mrs. Helen Campell, describes especially the Young Women's Christian Association building of New York and the methods of work of the Association. "An American Amateur Astronomer" is an illustrated sketch of the career of Mr. Burnham, formerly of Chicago. Accompanying the article is a portrait of the amateur astronomer, and a map showing the distribution of the double stars discovered by him. In the *Life of Lincoln* several interesting chapters on important political events are published: "The Pomeroy Circular," "The Cleveland Convention," "The Resignation of Chase." The Old Master written about and illustrated by Stillman and Cole in this number is Spinello Arentino. Mrs. Mary Hallock Foote's serial story, "The Last Assembly Ball," is concluded in this number. "The Relations of the United States and Canada" is the subject of a paper by Charles H. Lugin. Short stories are published by George A. Hibbard, entitled "The Woman in the Case," and by James Lane Allen, entitled "King Solomon of Kentucky," illustrated by Kemble. An interesting personal chapter is that by Mrs. Margaret J. Preston, the poet, who describes General Lee in his home "After the War." Mrs. Mary Hallock Foote's Far West picture is entitled "The Irrigating Ditch." In "Memoranda of the Civil War" are "The Canal at Island No. 10," "An Early Suggestion to Arm Negroes for the Confederacy," "Stonewall Jackson's Intentions at Harper's Ferry," and "A Question of Command at Franklin." In "Topics of the Time" are editorials on "John Bright," "The New States," "How to Preserve the Forests," and "The Dark Continent." "Open Letters" deal with the Stedman-Hutchinson Library of American Literature, "Buchanan, Lincoln, and Duff Green," "Sea-Coast and Defenses," and "The Place Called Calvary." Poems are printed in this number by Langdon Elwyn Mitchell, Louise Morgan Smith, Edith M. Thomas, and in "Bric-a-Brac" by Charles Henry Webb, J. A. Macon, M. L. Murdock, R. T. W. Duke, jr., M. E. W., Annie D. Hanks and George Birdseye.



BIRD & CRANE MFG. CO., KALAMAZOO, MICH.

MANUFACTURERS OF PATENT

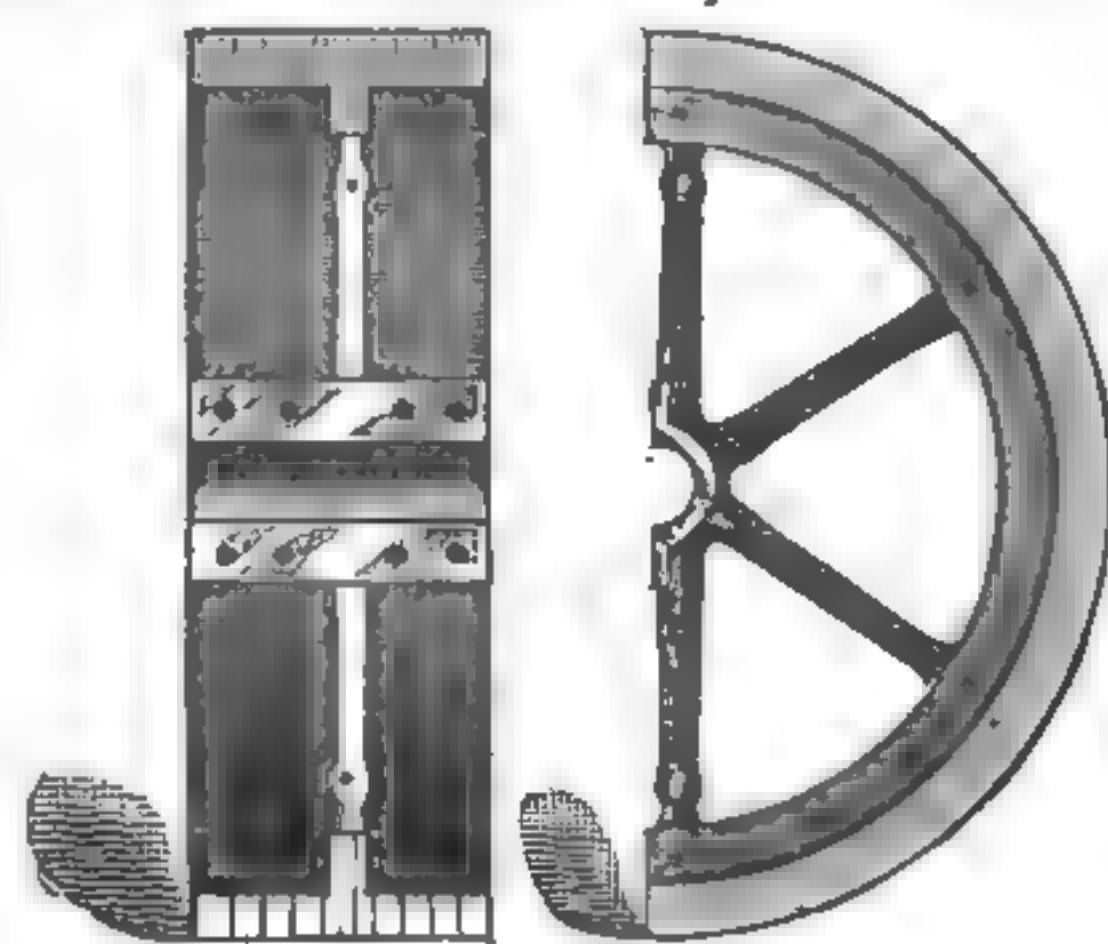
Wood Split Pulleys

WOOD RIM WITH IRON ARMS.

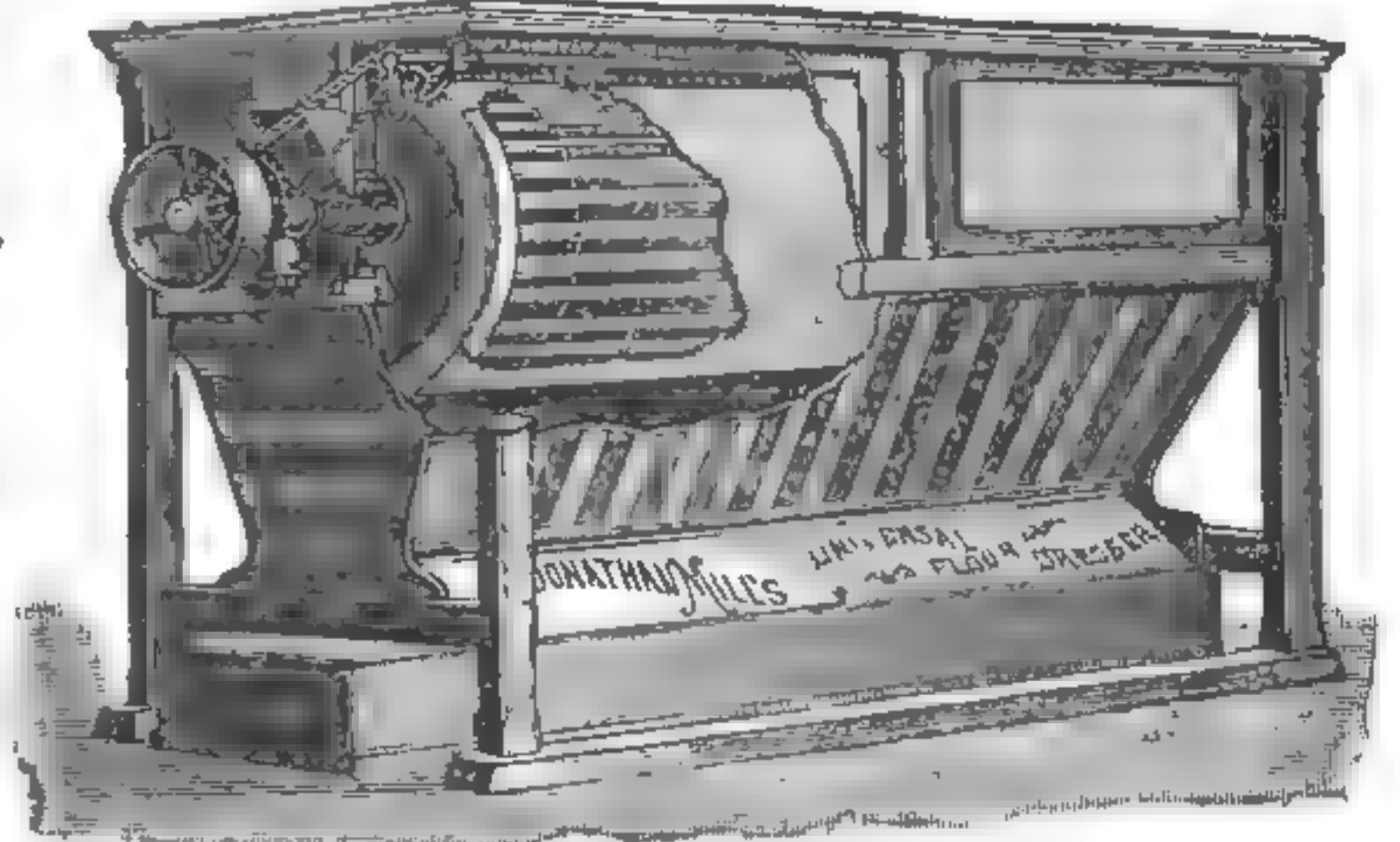
The Best Pulley on Earth!

Is very easily and quickly adjusted to Shaft. Has Patent Iron Bushings Interchangeable, to Fit Different Diameters of Shafts. Has FOUR or SIX Bearings on Shaft. This fastening never slips. Every Pulley strongly built and perfectly balanced.

SEND FOR CATALOGUE AND PRICE LIST.

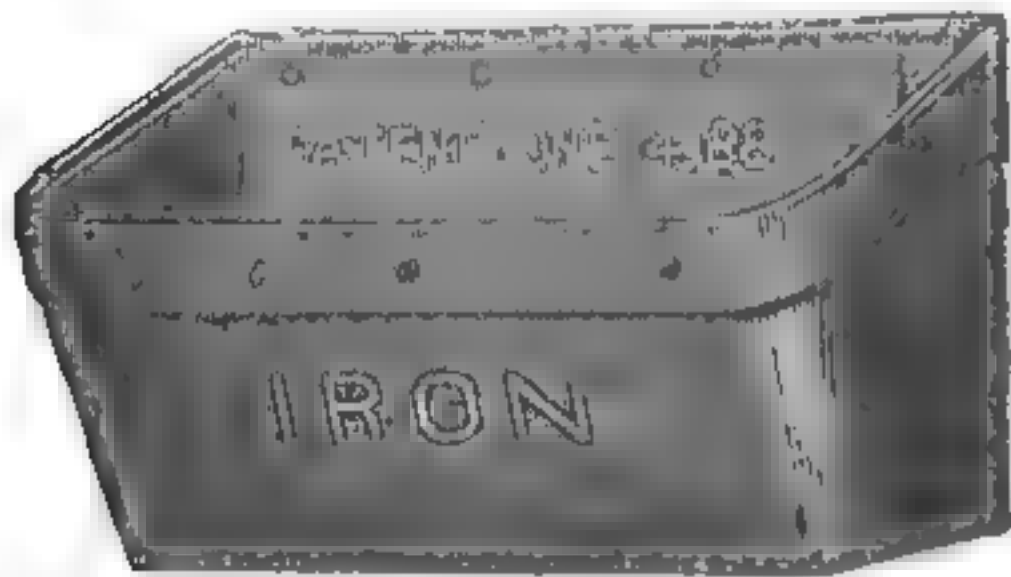


MILLERS of the United States and Canada write us for our new pamphlet and revised price list of our **Jonathan Mills UNIVERSAL FLOUR DRESSER**. The best machine on the market. Giving satisfaction everywhere in the best mills in this country. Thousands in use. We carry a full line of Crown Silk anchor Bolting Cloth and Grit Gauzes.



WE SOLICIT YOUR TRADE.

The Jonathan Mills Mfg. Co., Cleveland, Ohio, U. S. A.



Made of sheet steel, with heavy band.

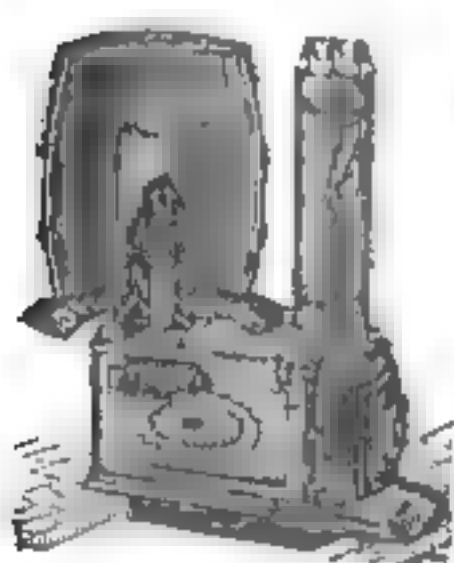
BOSS & ELEVATOR & BUCKETS.

If you are interested ask for Prices. Manufactured only by
W. P. MYER, INDIANAPOLIS, IND.

16, 18 AND 20 EAST SOUTH STREET.



Made of tinned steel plate, with iron band.

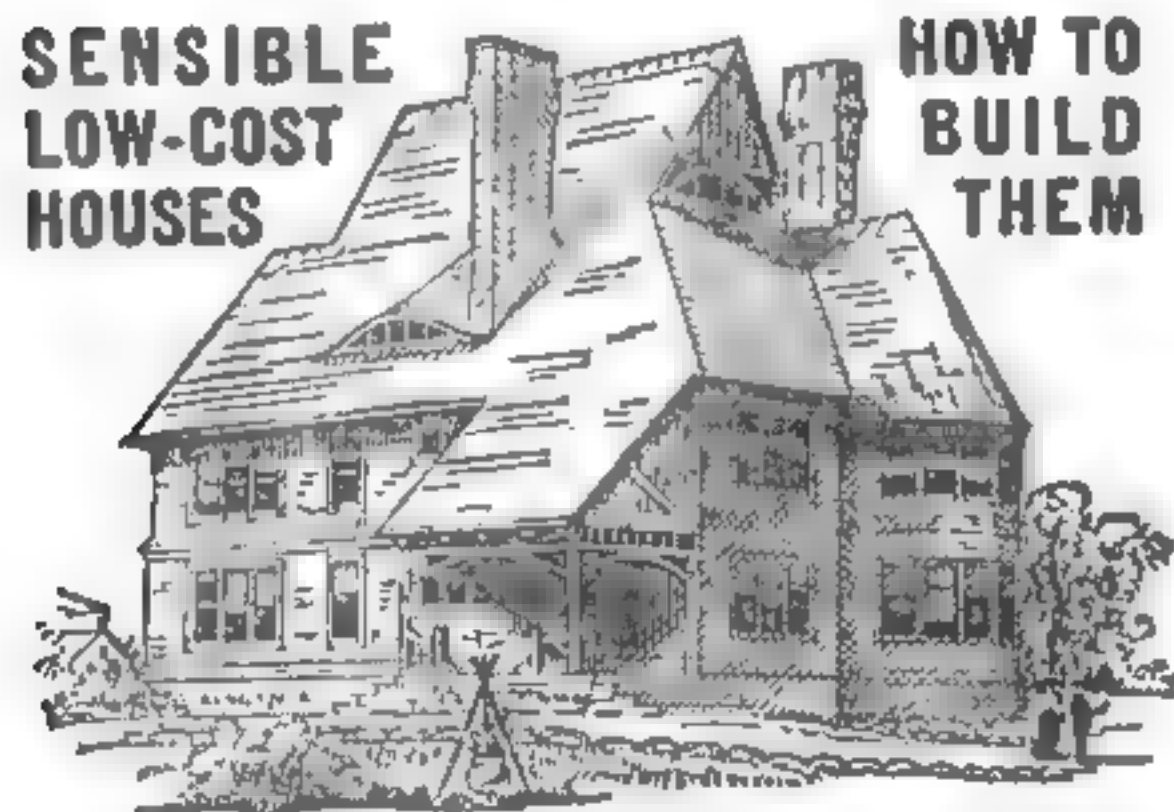


**MOORE'S
PATENT
BARREL HEATER.**
For all kinds of coo-
rage. Thousands
in use in all parts of the
U. S. Send for Circular.

JOLIET STOVE WORKS. JOLIET ILL.

**SENSIBLE
LOW-COST
HOUSES**

**HOW TO
BUILD
THEM**



A large Atlas, giving illustrations and full descriptions of 56 desirable modern houses, costing from \$800 to \$7500. Every detail profusely illustrated, showing many valuable original ideas. Shows what to do and what not to do. Houses adapted to all climates described. The latest, best, and only cheap work published. Sent by mail on receipt of \$1.00 NATIONAL ARCHITECT'S UNION, PHILA., PA.

**The D & C
TO MACKINAC**

SUMMER TOURS.

PALACE STEAMERS. LOW RATES.

Four Trips per Week Between
DETROIT, MACKINAC ISLAND
Potoskey, Sault Ste. Marie, and Lake
Huron Way Ports.

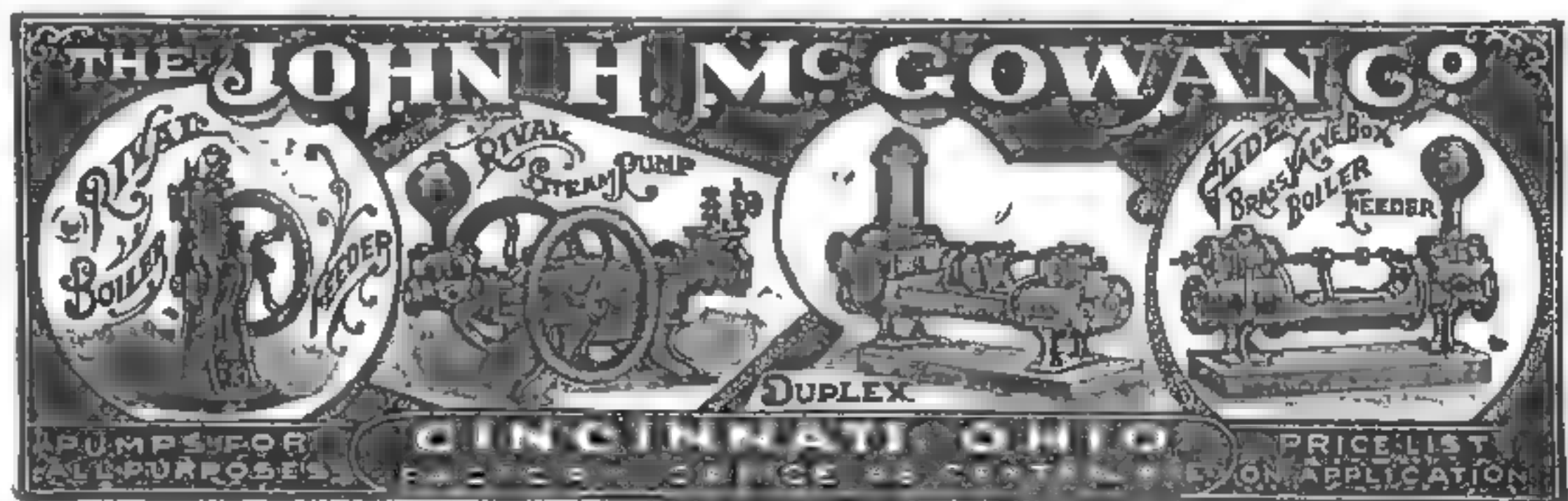
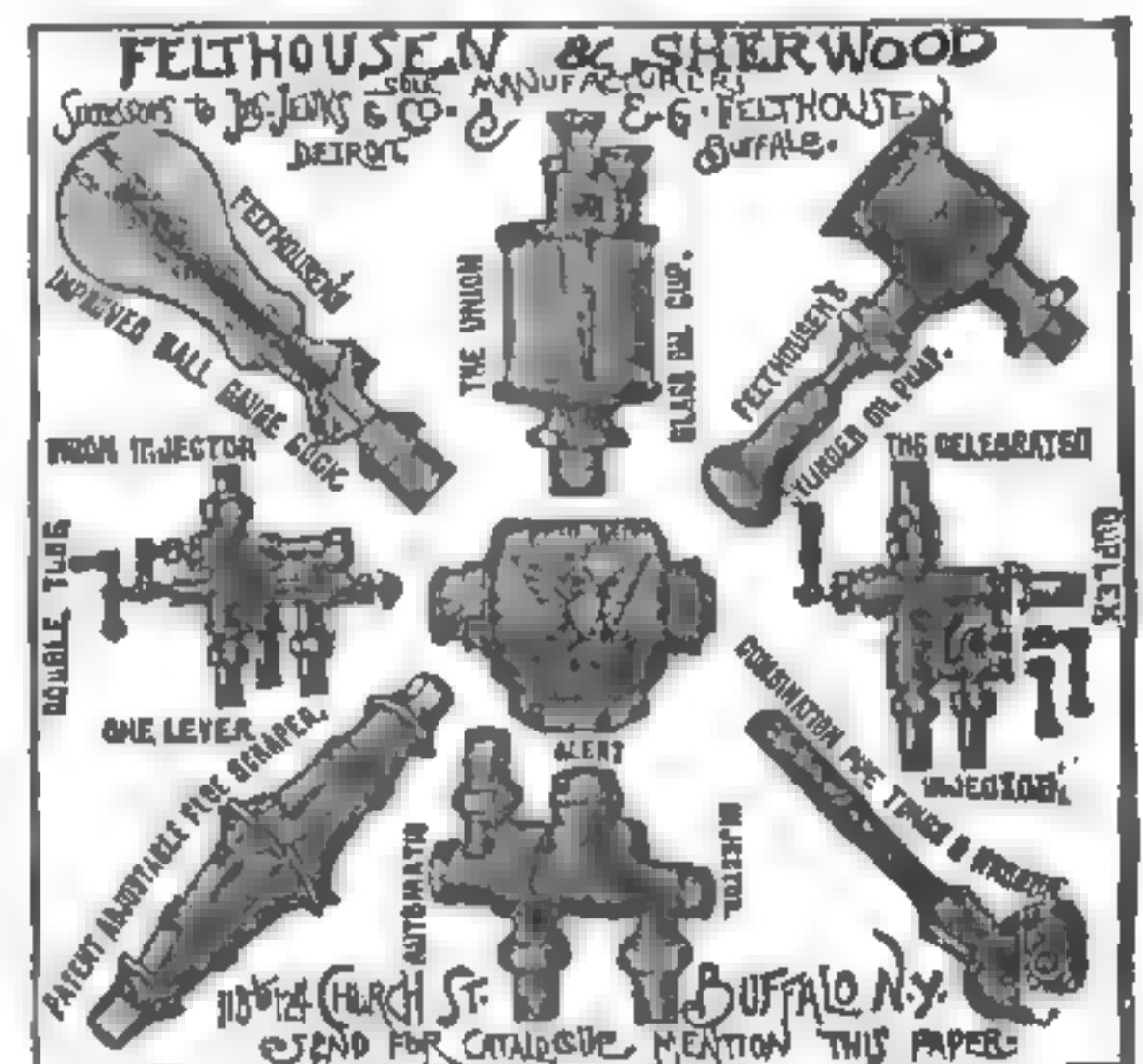
Every Week Day Between
DETROIT AND CLEVELAND
Special Sunday Trips during June, July, August and Sept.

Double Daily Lines Between
CHICAGO AND ST. JOSEPH, MICH.

OUR ILLUSTRATED PAMPHLETS
Rates and Excursion Tickets will be furnished
by your Ticket Agent, or address
E. B. WHITCOMB, G. P. A., DETROIT, MICH.,
Detroit and Cleveland Steam Nav. Co.

**WOOD
ENGRAVING
LITHOGRAPHY**
THE DOWNELL CO.

**SHIPPER'S
CAN SAVE TIME
AND TROUBLE
AND CASH**
BY USING
**BARLOW'S
SHIPPING
BLANKS** SEND FOR
SAMPLE SHEET & PRICES
BARLOW BROS. GRAND RAPIDS, MICH.



BRANCH HOUSE, 1425 EAST MAIN STREET, RICHMOND, VA.

WIRE BOLTING CLOTH—STEEL, BRASS & TINNED

—[ESTABLISHED 1844]—

Exclusive Manufacturers of the

**"ACME" STEEL TEMPERED
BATTERY & BOLTING WIRE CLOTH**

Also manufacturers of Bran Duster Cloth, Plated Wire
Mill Screen Cloth, Smut Cloth, Brass and Copper Wire
Cloth. A full line constantly on hand. Send for sam-
ples and price lists.

Brooklyn Wire Cloth Works.

NO. 107 JOHN STREET, NEW YORK.

CLOTHS MADE UP WITH PATENT BINDING WHEN DESIRED.

EUROPEAN ECHOES.

A PATENT has been taken out in France for preserving seed and plants from the action of parasites and hastening the germination of the seeds. To protect them when placed in the ground they are steeped in antiseptic and fertilizing fluids. The best liquid is said to be composed as follows: Acetate of aluminum 15 parts; acetate of lead 70 parts; carbonate of lime 15 parts. These are dissolved in water and used either for the seed or for watering the young plants.

By a decree dated March 23, 1889, the import duty on wheat in Portugal was raised to \$4.43 per 480 pounds, and that on flour to \$3.81 per sack of 280 pounds. Foreign wheat already arrived in port in Portugal on March 23, or on passage direct from any foreign producing port, was exempt from the increased duty. The previous duty fixed on December 15, 1888, was \$3.84 per quarter on wheat and \$3.28 per sack on flour. In Spain the opposition has also brought forward a bill to increase the duties on grain and flour, which the Government has rejected.

ANTWERP reports state that the grain trade there is under the influences of the consequences of this year's frightful American bear and bull comedy. A total loss of confidence prevails, both with importers and millers; business which in regular time would have been in full swing is now lifeless, every one buying from hand to mouth, and it seems every day more probable that Antwerp this season will not become a big importer as in former years, but purchase only for strictest wants; any speculative enterprise, even the most legitimate, having completely disappeared.

SAYS the London, England, "Mark Lane Express:" A settler in South Australia gives an estimate of what it costs him to produce an acre of wheat, and the conclusion that he works out is instructive. He says he can carry on farming with profit and pleasure with an average of eight bushels per acre sold at 2s. 6d. per bushel, or at the rate of £1 per acre. This colonist is of opinion that it is almost impossible to say to what depths they might reach before wheat-growing in South Australia becomes unremunerative. With his lands clear and a full complement of implements, he concludes that he could live on 10s. an acre gross income!

SAYS a London paper: The new volume of the Royal Agricultural Society is an exceedingly interesting one. Among the papers in it is one by Henry Evershed on "The Varieties of Wheat and Methods of Improving Them," which is well worth reading. After describing some of the older systems of plant improvement, those by Mr. Hallet and others, he states that any kind of wheat can be enlarged by thin seeding on good land; but the result is not a new variety and is not even permanently altered, though it is certainly spoiled for a time. None of these enlarged forms of wheat have found favor in the great corn countries. From what evidence he has marshaled in his paper, Mr.

Evershed concludes that new varieties of wheat usually owe their introduction to accidents. As the result of impregnation Mr. Raynbird obtained a few shriveled grains. Messrs. Carters' cross-fertilization experiments resulted in the propagation of several productive cross-bred varieties, which seem to possess in a high degree the vigor of constitution which is often observed in crosses both among plants and animals.

A LONDON correspondent of the Liverpool "Corn Trade News" says: "Wheat in America, without an export demand, is like an elephant bestowed upon the tenantry of Donegal; and holders of wheat next September, at present prices, may well wonder what they are going to do with it. Only one thing can be done with elephants; they must be sold, got rid of and shifted upon somebody else who can eat the property or run the show. It may, however, be a somewhat difficult negotiation to coax the markets of Europe to name the price, because with a 40-million acreage in the United States and Canada, together with an average yield of nearly 15 bushels, as indicated by the latest official returns, the outlook means a crop of about 600 million bushels for the coming season."

A LONDON correspondent writes: "It is a very singular thing that up to a fortnight ago the reports from France were that there was no stock left of home-grown wheat, and that large quantities of foreign produce would be required to reach the next harvest. But now that the decline has made further progress, we hear from all sides, on the best authority, that the farmers are again delivering home-grown wheat freely, and that the demand for Californian and other imported wheats in warehouse at the French seaports has very considerably decreased, and that in fact it would appear that there is sufficient wheat in France at the present moment to reach the next harvest without further importation, particularly as with the continuance of fine weather the new harvest will probably be very early."

MILLING PATENTS.

Among the patents granted May 28, 1889, are the following:

John Boyd, Baltimore, Md., No. 403,910, a centrifugal machine for treating grain.

Jos. H. Thomas, Alliance, O., No. 403,974, a flour-bin and sifter.

Chas. H. Cooley, Hartford, Conn., No. 403,988, an automatic grain-scale.

Hugh W. McEwen, Tiverton, Ontario, Canada, No. 404,100, a bolting-chest.

Orville M. Morse, Jackson, Mich., No. 404,216, a dust-collector, and No. 404,217, a dust-collector.

Earl H. Reynolds, Prophetstown, Ill., No. 404,225, an automatic grain-meter.

Laughlin M. Buchanan, Elmira, Ill., No. 404,257, an automatic grain-weighing machine.

John B. Cornwall, Moline, Ill., No. 404,345, a rotary bolt.

The Canton Cabinet Filing Case Company, Canton, Ohio,

MANUFACTURERS OF

The New Buckeye Document Case & Letter File; Also All Kinds Office Furniture



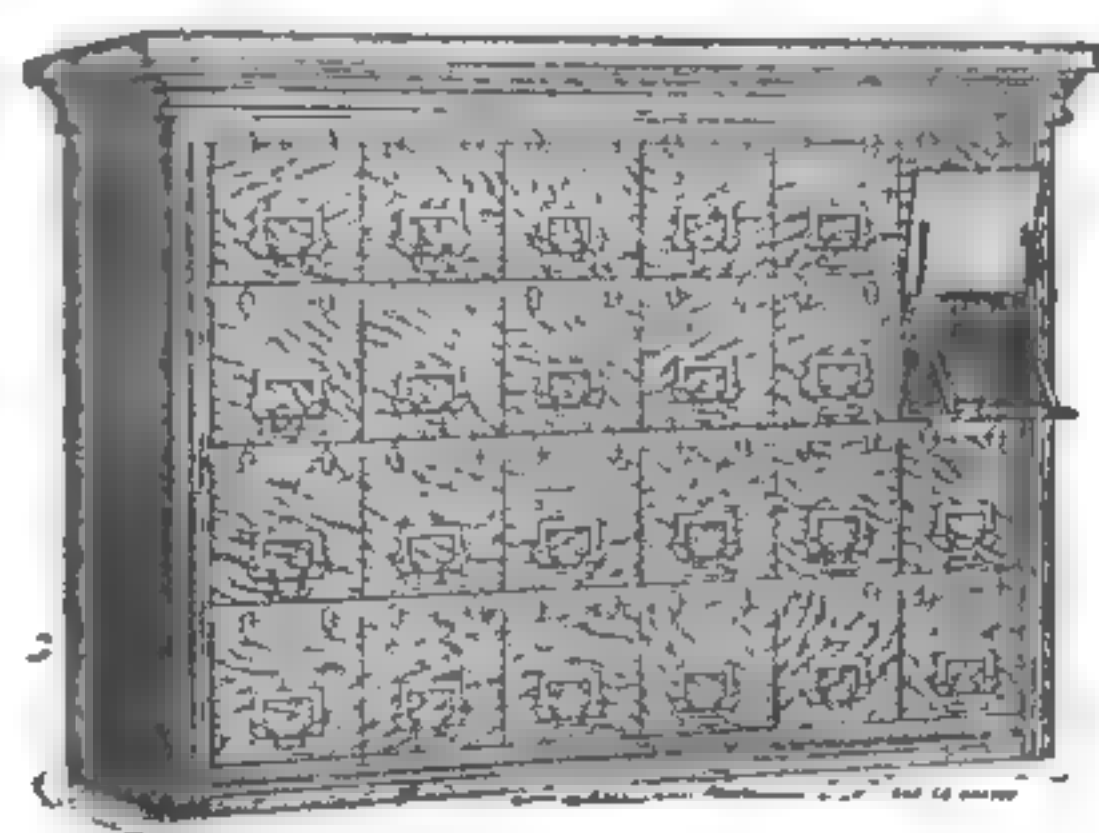
NO. 8.

NO. 8 Represents one side of one of our Revolving Cabinet Letter Files and Document Cases Combined. It contains 80 Document Drawers and 8 Letter File Drawers. In filing letters we use first VOWEL of name on front of drawer, and LETTER FOLLOWING first VOWEL on Index Sheet within drawer. We also make more exhaustive systems which contain from 6 to 100 or more Filing Drawers.

NO. 1 Represents one of our small Document Cabinets, for use on desks or brackets. Action of drawer can be seen in the cut. When front is raised inner drawer comes forward, exposing contents of drawer for inspection.

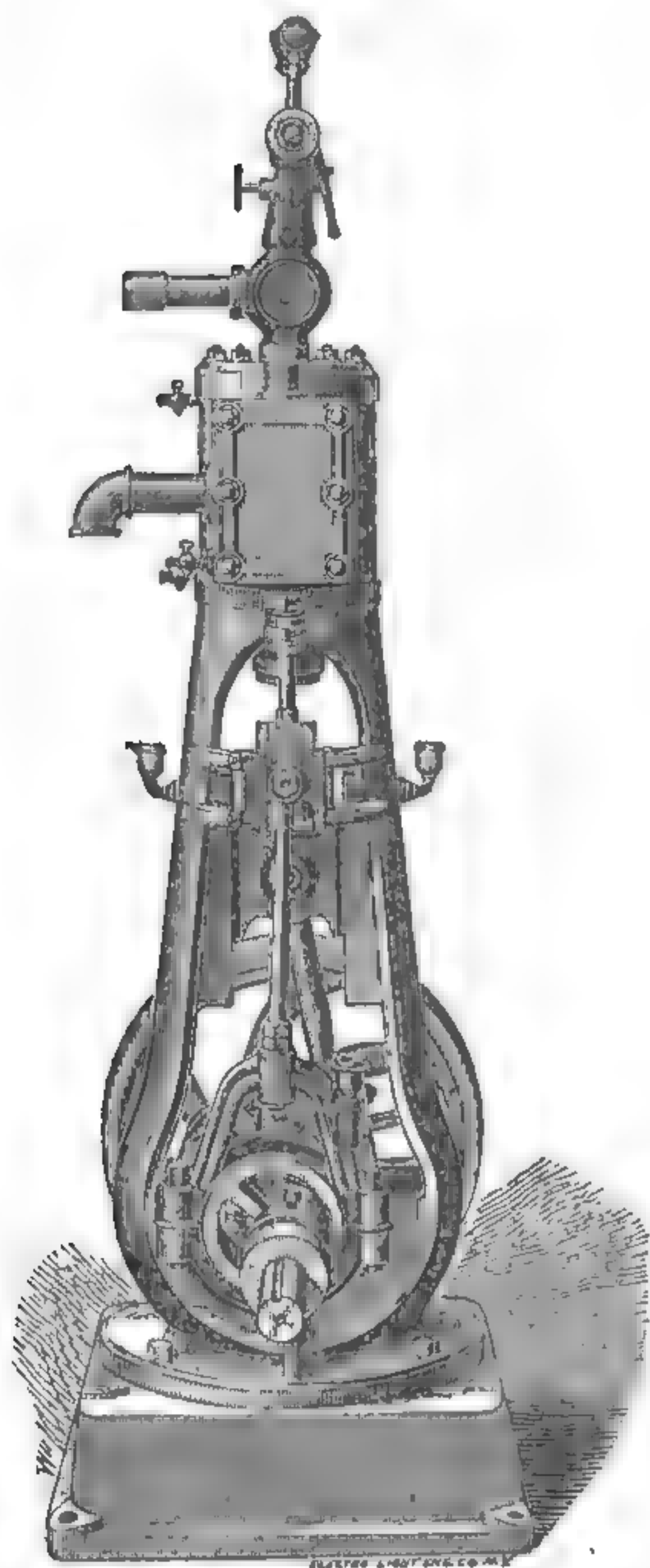
Our Cabinet Files are Conceded to be the Most Convenient of Any in the Market. They are Compact, Simple, Complete, Durable and Ornamental.

SEND FOR PRICE LIST AND CATALOGUE.



NO. 1.

AUTOMATIC VERTICAL ENGINES



Especially adapted for Small Electric Light Plants. Perfect Regulation. Reversible Link Motion for Marine Use. Five to Fifteen Horse Power. Also manufacturers of

Lathes and Special Tools

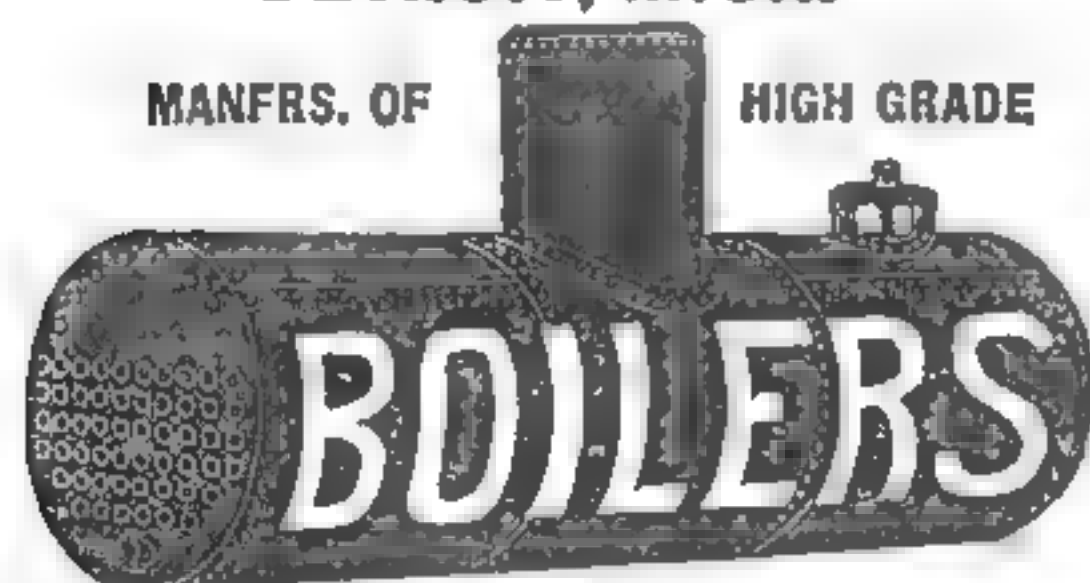
Metal Patterns, Models and Machinery Built to Order. Send for Prices and Specifications.

Lloyd & Sterrett

COR. 16TH AND STATE STS.,
ERIE, - - PENN.

EAGLE IRON WORKS, DETROIT, MICH.

MANFRS. OF HIGH GRADE



HORIZONTAL, UPRIGHT
PORTABLE AND MARINE.

Oil Tanks & Smoke Stacks,

HEAVY SHEET IRON WORK.

CORRESPONDENCE SOLICITED.

PAYNE HIGH SPEED CORLISS ENGINE

SHAFT GOVERNOR COMBINED WITH CORLISS WRIST-PLATE.

ECONOMY OF FUEL.

REGULATION EQUAL TO ANYTHING IN USE.

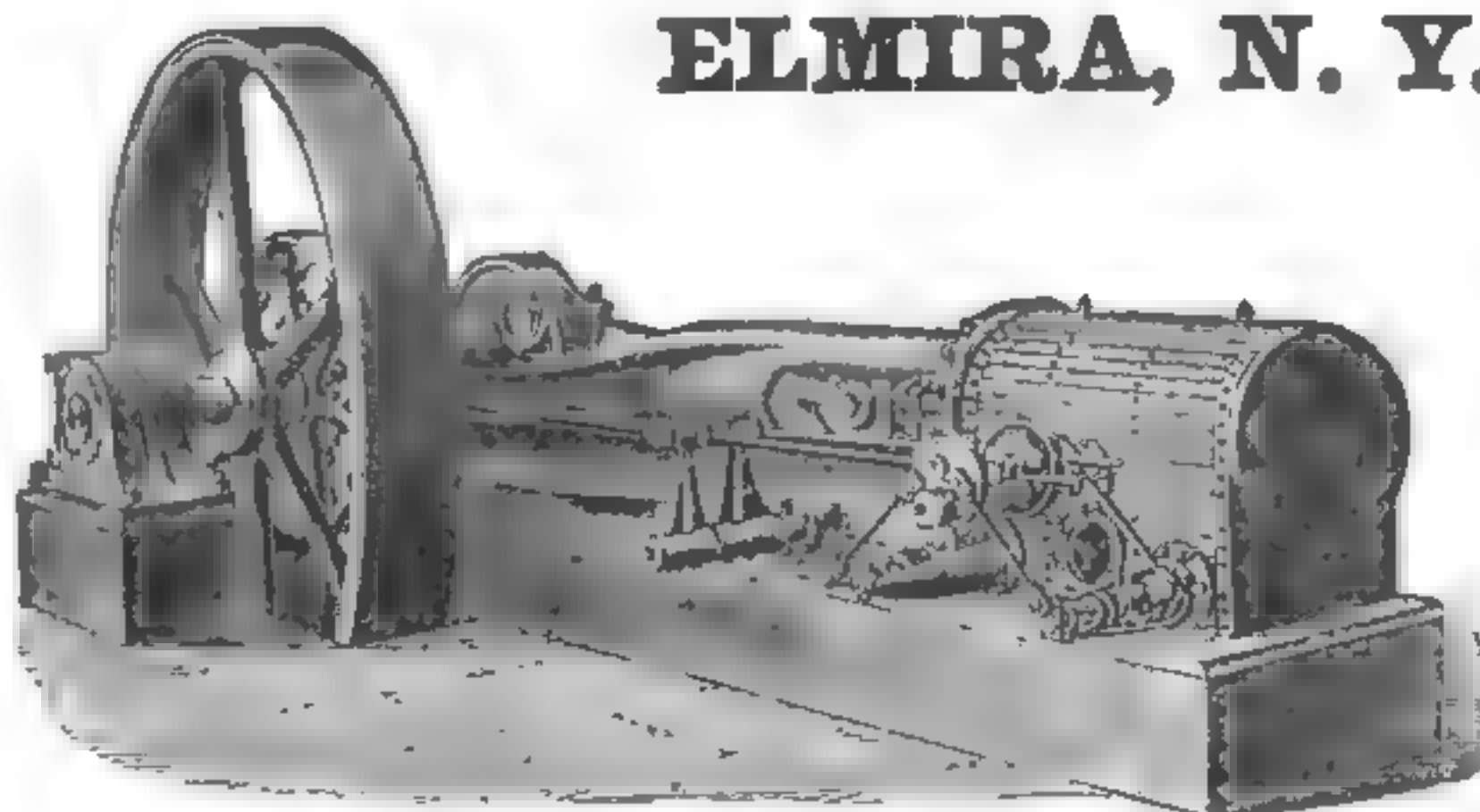
B. W. Payne & Sons,

ELMIRA, N. Y.

10 S. Canal Street,
CHICAGO, ILL.

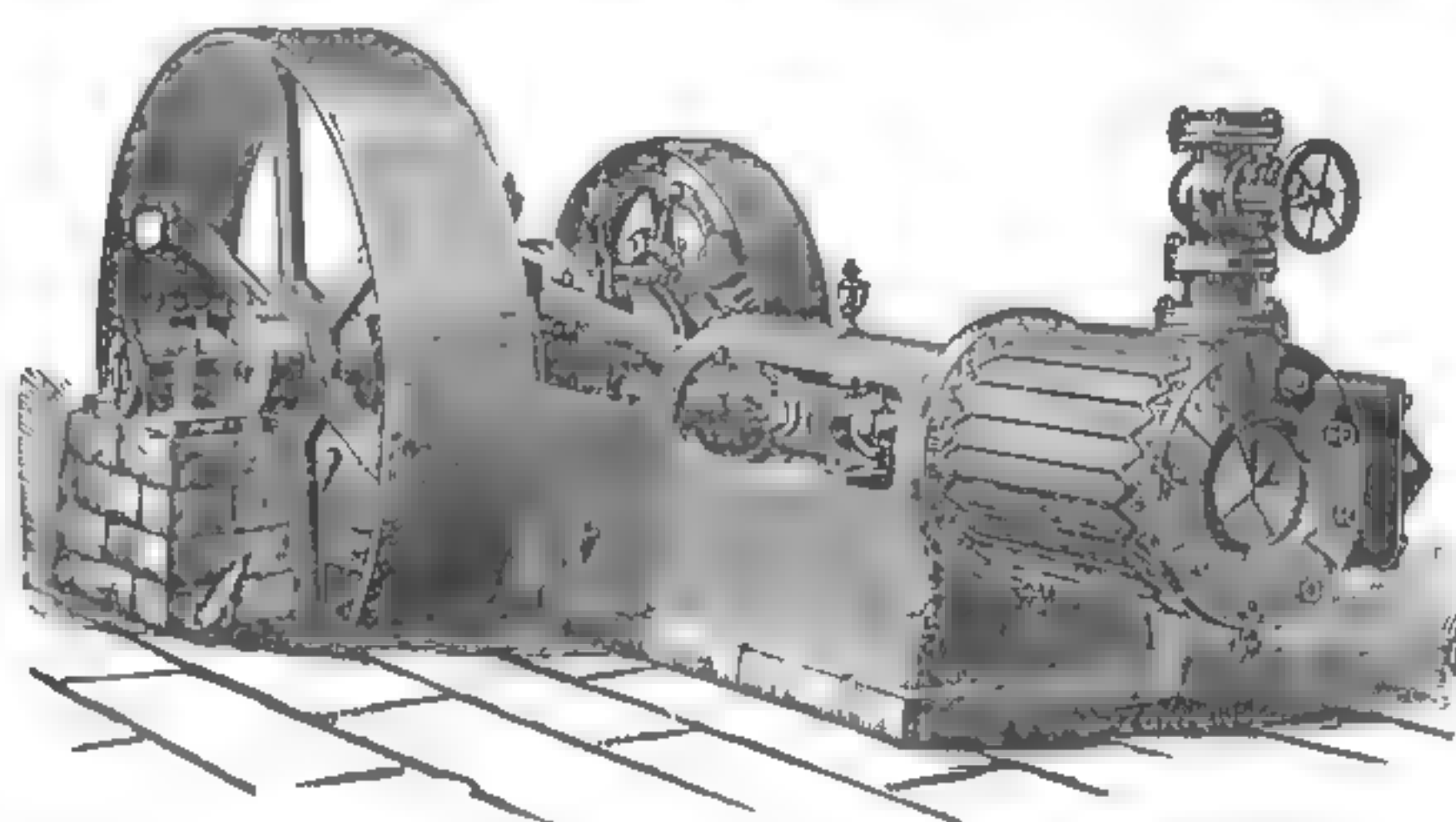
45 Dey Street,
NEW YORK.

Hill, Clark & Co.
BOSTON, MASS.



AUTOMATIC ENGINES FROM 2 TO 200 HORSE POWER.

Economic Power Plants



Especially Adapted to Electric Lighting and

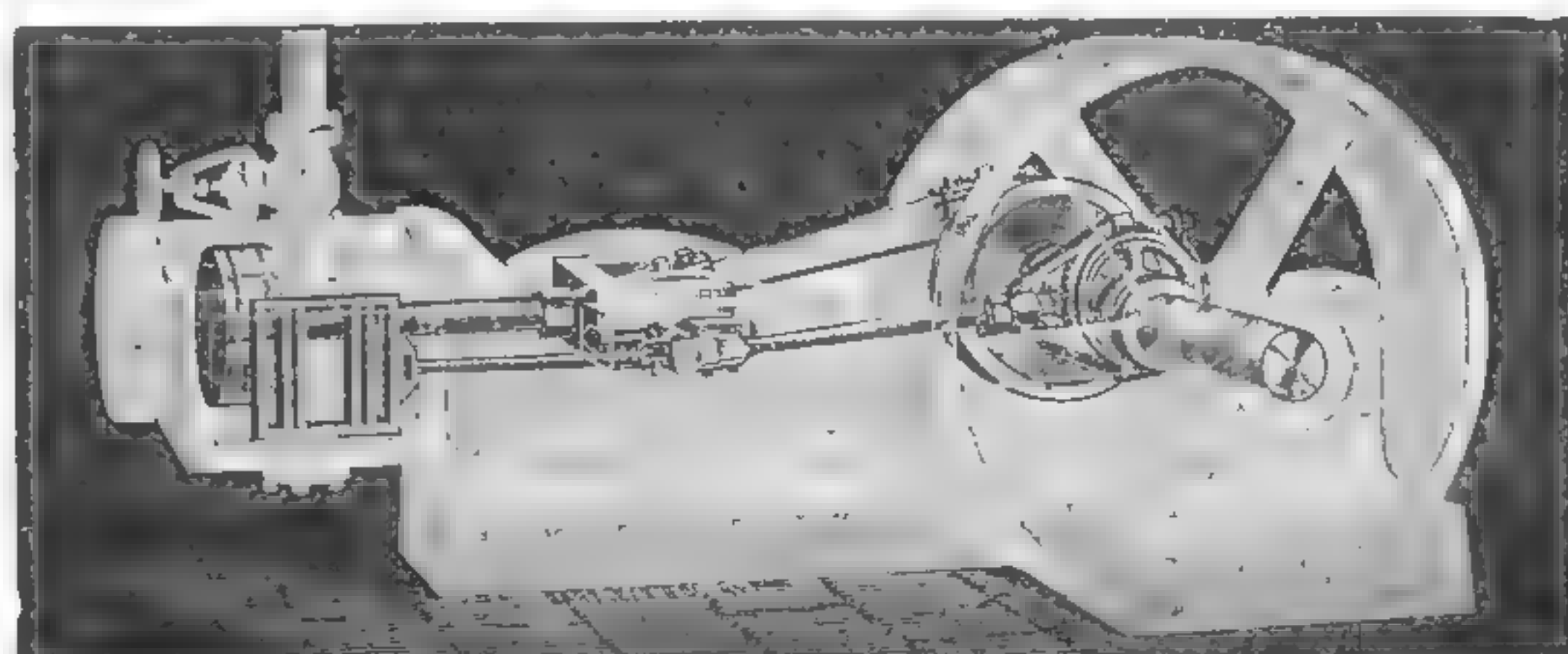
WOOD-WORKING ESTABLISHMENTS

MANUFACTURED BY

VALLEY IRON WORKS, WILLIAMSPORT, PENN.

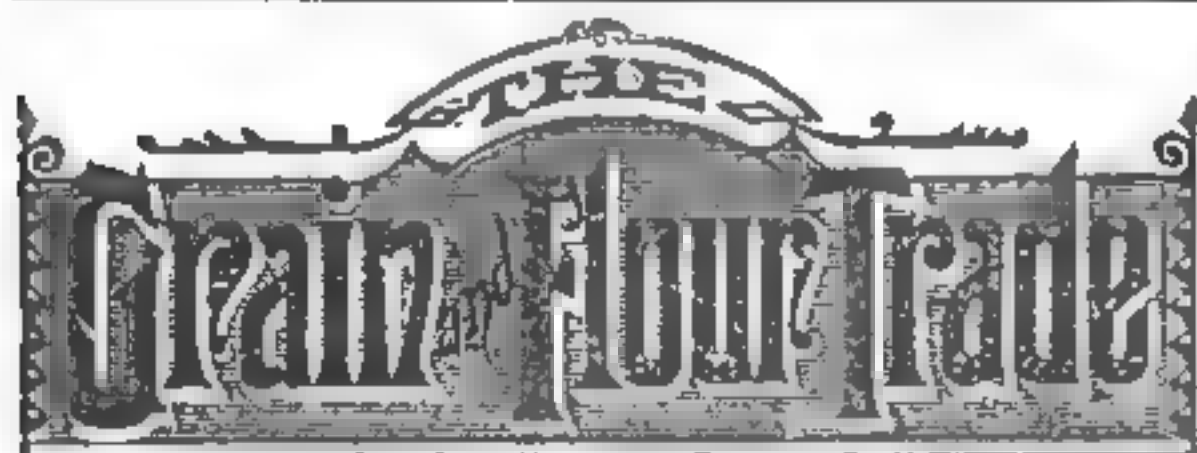
Please Send for Our New Catalogue and Mention "The Milling World."

THE NEW PORTER HEAVY-DUTY ENGINE.



The Most Power for the Money, and All Things Considered the Most Economical.
For Illustrated Circular Address,

PORTER MANUFG. CO., LIMITED, SYRACUSE, N. Y.



OFFICE OF THE MILLING WORLD,
BUFFALO, N. Y., June 8, 1889.

Friday of last week opened with wheat stronger on reports of rain, chill and snow in the West, and closed easier on covering by shorts. June wheat opened at 81½c. and closed at 80¾c. Options 4,104,000 bushels. Exporters took 15 loads for Europe. The day closed with bear reports of a crop of wheat in South Carolina, Georgia, Texas, Alabama, Tennessee and California 10 to 15 per cent. larger than the 50,000,000-bushel crop of those states in 1888. The bulls claimed that in those states harvesting is delayed by cold weather. June corn opened at 40¾c. and ruled at that figure, with the exception of one fly to 41¼c. on crop reports that were denied later. Sales to exporters were considerable. June oats ruled at 27¼c. Wheat flour was dull and unchanged. Exporters took small lots. The minor lines were featureless. The excitement over the refusal of quotations to the bucket-shops by the Chicago Board of Trade was the most interesting feature of the day.

On Saturday the markets were lower and generally easier on improved weather reports west and in Europe. June wheat opened at 80½c. and closed at 80¼c. Options 3,600,000 bushels. Chicago was weak on wheat. June corn closed at 40¾c. and oats at 27¼c. Wheat flour was dull and easier on higher and medium grades, with holders in Ohio and the West asking for bids and offering concessions on both high and shipping grades of springs. Exporters were making inquiries. The minor lines were featureless.

On Monday the crop reports at the opening were of a character to weaken wheat, and the weakness was intensified for a time by bear selling. Towards the close there was a steadier feeling in most lines. June corn opened at 80c., sold down to 79¾c. and closed at 80¾c. Options 2,760,000 bushels. There was some export demand. June corn ruled at 40¾c., and oats at 27¼c. Wheat flour was lower to sell on all grades above \$3.25 by 5 to 10 cents. The closing was dull and easy. There were no marked features in the minor lines. The visible supply in the United States and Canada was as follows:

	1889.	1888.	1887.
Wheat.....	20,205,816	26,425,426	42,450,571
Corn.....	11,607,931	9,210,452	12,709,312
Oats.....	6,335,032	5,899,221	3,453,327
Rye.....	1,103,450	206,412	259,344
Barley.....	498,535	328,001	194,550

The official stock of flour June 1 in New York was 181,302 barrels, of which 73,936 are winters and 110,366 springs, or 16,000 less than a month ago, the reduction being chiefly in springs; this is 70,000 more than a year ago.

On Tuesday bad weather reports in the West and England sent wheat up at the opening, but the closing was easier on better reports. June wheat ruled at about 80¼c. Options 2,500,000 bushels. June corn firmed up to 41¼c. at closing on unfavorable weather reports and general backward conditions. June oats ruled at 27¼c. Wheat flour was dull and easier, with but small export inquiry and little trade demand. The price of American flour in English markets is lower than American wheat in New York, and the high grades of flour in New York are higher than wheat and than flour a year ago, while wheat is lower, though bakers' spring extras are lower than a year ago because of quality, or \$2 under patents, against \$1 difference a year ago. The minor lines were featureless.

On Wednesday there was a decided change in the situation. Wheat opened stronger on bad weather reports in the Northwest, 30,000,000 reduced crop estimates in California, poor crop in Southern Illinois, and reports of drought

in Russia; all these, together with the turning of the big local bear traders in Chicago to the bull side, and the increased buying by foreign houses of December, gave the market a decidedly more bullish feeling, and it looked as if both bulls and bears had got tired of the late dullness at prices so low that there was no outside trading, and had joined hands for an upturn to see if the public would follow, and, if not, get a higher level on which to go short again. June wheat closed at 81½c. Options 3,160,000 bushels. Some export trades reported. June corn firmed up to 41¼c. at closing. June oats closed at 27¼c. These closing prices were considerably below those of last year on the same date, being 10 cents less on wheat, 21 cents less on corn and 10 cents less on oats. Rye grain was dull and weak at the following quotations: Boat loads of State and Jersey afloat, offered at 53c, and 50c bid on spot and track; 48@50c for ungraded; strictly No. 1 scarce at 51@52c in elevator nominally; Western 46@48c spot, afloat and to arrive. Malt was easier to sell at the following quotations: 92¼c@\$1.00 for Canada; two-rowed State, 85@87c; six-rowed do, 88@95c. Mill-feed was lower at the following figures: 50@55c for 60-lbs, 50@60c for 40-lbs, and 80-lbs, and 75@80c for 100-lbs; rye chop, 65@70c; \$1.20@1.30 for both oil and cotton seed meal.

Wheat flour was dull and in buyers' favor without being generally lower. Trade was light. The quotations were as follows:

SPRING FLOUR.		
	Sacks.	Barrels.
No grade.....	\$1.70@1.85	\$....@....
Fine.....	2.10@2.15	2.25@2.50
Superfine.....	2.30@2.60	2.70@3.00
Extra No. 2.....	2.90@3.10	3.00@3.25
Extra No. 1.....	3.30@3.65	3.50@4.15
Clear.....	3.35@3.65	3.65@3.90
Straight.....	4.35@4.90	4.40@5.15
Patent.....	5.20@5.50	5.05@5.75

WINTER FLOUR.		
	Sacks.	Barrels.
No grade.....	\$1.80@2.00	\$....@....
Fine.....	2.20@2.50	2.35@2.60
Superfine.....	2.60@3.00	2.90@3.15
Extra No. 2.....	3.10@3.40	3.35@3.50
Extra No. 1.....	3.50@4.15	3.70@4.70
Clear.....	3.65@4.00	3.90@4.45
Straight.....	4.15@4.50	4.40@4.70
Patent.....	4.40@4.65	4.90@5.25

CITY MILLS.	
W. I grades.....	\$4.20@4.35
Low grades.....	2.35@2.65
Patents.....	4.90@5.90

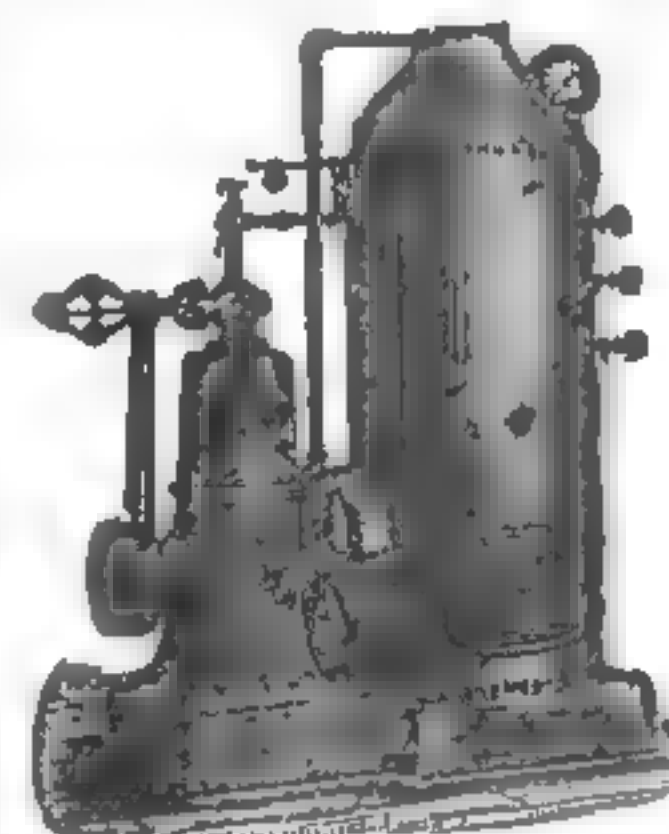
Rye flour was dull and moved in small lots at \$2.65 for old to \$2.90 for fresh-ground superfine. Corn products were steady with corn, but not noticeably higher. The quotations were: City coarse, in bags, 80c; fine yellow do, 96c; fine white do, 95c; Brandywine, \$2.85; Western and Southern, \$2.70@2.85; hominy and samp, \$2.70@2.75.

On Thursday the conditions did not show material change. June wheat closed at 80¾c. Options 3,040,000 bushels. Corn for June closed at 41¼c. June oats closed at 27¼c. Wheat flour was slow and unchanged, with moderate dealings. The general crop situation has not been much altered by the heavy storms of the past week.

BUFFALO MARKETS.

WHEAT—There was a fair demand for spring wheat to-day. Sales were made of 1,000 old No. 1 do at \$1.94½; and 500 bu new No. 1 hard at 98c; old No. 1 Northern was quoted at 98c; new do at 95c; No. 2 do at 81c; and No. 2 spring at 86c. The highest price paid for Chicago June wheat was 77¼c; lowest 77¼c, the highest paid for July was 76¼c and the lowest 75¼c. Winter wheat dull: No. 2 red was offered at 85c; No. 3 extra trade at 79@80c; No. 1 white Michigan at 90@90½c on track; No. 1 white Oregon at 85c; No. 2 extra trade at

85@88c. CORN—In fair demand and market weak and lower. No. 2 corn was quoted at 38c, and No. 3 was offered at 37c; No. 2 yellow at 38c, and No. 3 do 37½c. The highest price paid for Chicago June corn was 38¾c; lowest 38¾c; the highest price paid for July was 34¼c, and the lowest 33¾c. OATS—Offerings light and demand confined to single car lots. No. 2 white quoted at 31@31¼c; No. 3 do 29¼@30c on track, and No. 2 mixed was quoted at 25½c in store. GANAL FREIGHTS—Firm. Rates of freight on wheat to New York 4c. on corn 3½c, on oats 2½c, and on rye, 3½c; lumber rates to New York \$2 25, to Albany \$1.75. RYE—Nominal at 52@53c for No. Western. FLOUR—City ground—Patent spring \$6.25@6.50 straight Duluth spring, \$5.75@6.00; bakers' spring, best, \$5.50@5.75; do rye mixture, \$4.75@5.00; patent winter, \$6.00@6.25; straight winter, \$5.00@5.25; clear winter, \$4.75@5.00; cracker, \$4.75@5.00; graham \$4.75@5.00; low grade, \$3.00@4.00; rye, \$3.25@3.50 per bbl. OATMEAL—Akron, \$6.00; Western \$5.75 per bbl; rolled oats, in cases, 72 lbs \$3.25. CORNMEAL—Coarse, 85c; fine, 90c; granulated, \$1.50 per cwt.



**DURABLE,
ECONOMICAL,
NOISELESS,
SELF-LUBRICATING,
LOW-PRICED.**

One and two Cylinder Engines, with vertical or horizontal boilers, are running 2 years without using a wrench on them.

1 to 15 H. P.

SEND FOR CIRCULAR TO

**CASTLE ENGINE WORKS
INDIANAPOLIS, IND.**



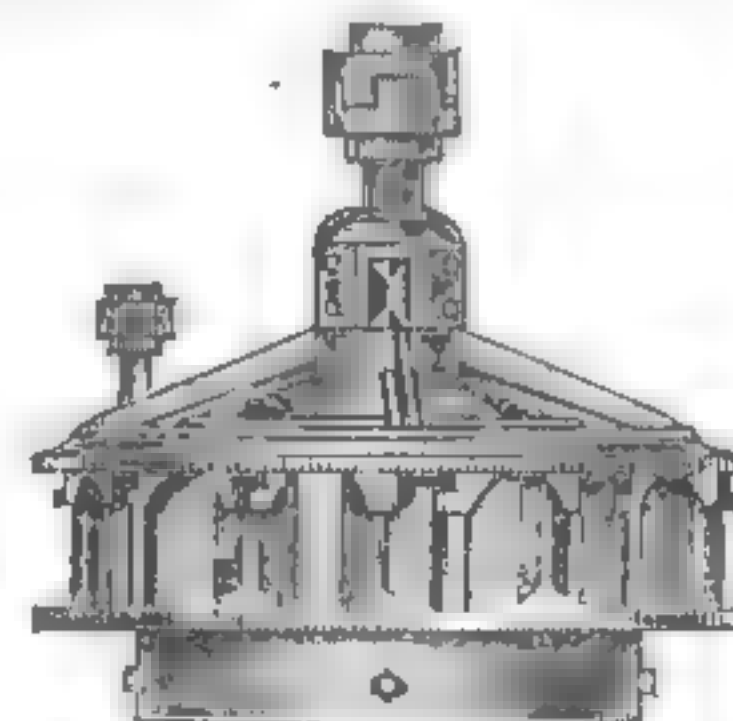
CHICAGO, 28 UNION SQUARE, N.Y., SAN FRANCISCO, CAL.
ST. LOUIS, MO. FOR SALE BY DALLAS, TEX.

N. BUSSENDORFFER.

THE IMPROVED "SUCCESS"

THIS WHEEL IS BOTH DURABLE AND CHEAP

PERCENTAGE: { Full Gate..... 86.29
¾ Gate..... 86.07
½ Gate..... 81.25

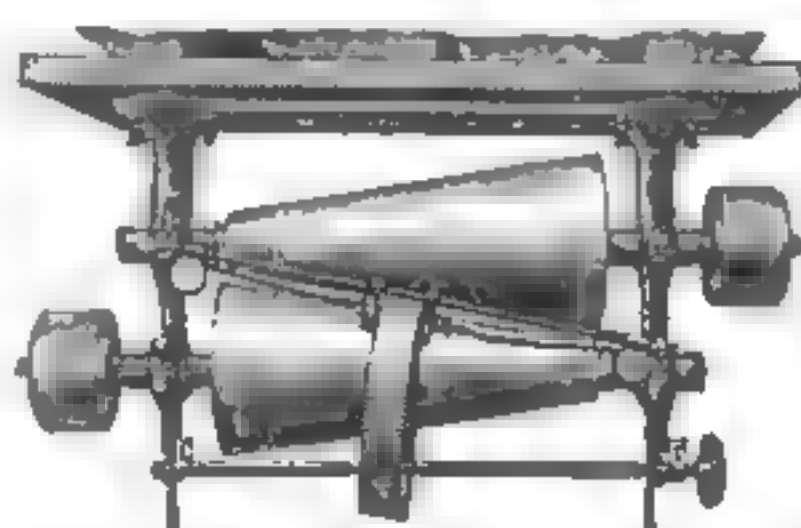


SEND FOR PAMPHLET TO

S. Morgan Smith, York, Pa.

THE EVANS FRICTION CONE & FRICTIONAL GEARING

"PATENTED."



This cut represents a set of hanging cone pulleys. This pattern is intended for that class of machinery that stops and starts at the same speed, and at the same time be able to change the speed more or less while running. These cones are also fitted with a governor where a steady motion is required and the initial power is

fluctuating. All sizes made from ½ Horse Power to 50 Horse Power. SEND FOR ILLUSTRATED

CATALOGUE.

EVANS FRICTION CONE CO., 85 Water St., BOSTON.



RELIANCE OIL & GREASE CO., CLEVELAND, O.,

—MANUFACTURERS OF—

Finest Lubricants for Milling Plants. A Challenge to the World.

WRITE US.

"VALVE OLEINE"—675 Degrees Fire Test, Cylinder Oil.

"CHIEF"—Roller Mill Lubricant.

"NIAGARA"—Belt Grease.

"RUSSIAN"—Engine and Machine Oil.

"ANCHOR"—Roller Mill Grease.

"CHELSEA"—Scale Solvent, Best on Market.

Agents Wanted.

FREE—SAMPLES, CATALOGUE, AND ALL INFORMATION.

SPECIAL
HIGH GRADE
PRODUCTS

**"DE MAN WOT KNOWS IT ALL
is allus a-makin' change, a-
buyin' ob experience."**

The man who does not think that
he "Knows It All" about
Pumps, Steam Engines and Boilers
Can find out a great deal about
them in

GRIMSHAW'S PUMP CATECHISM - \$1.00

STEAM ENGINE CATECHISM - - - 2.00

BOILER CATECHISM - - - - - 2.00

PREPARING FOR INDICATION - - 1.00

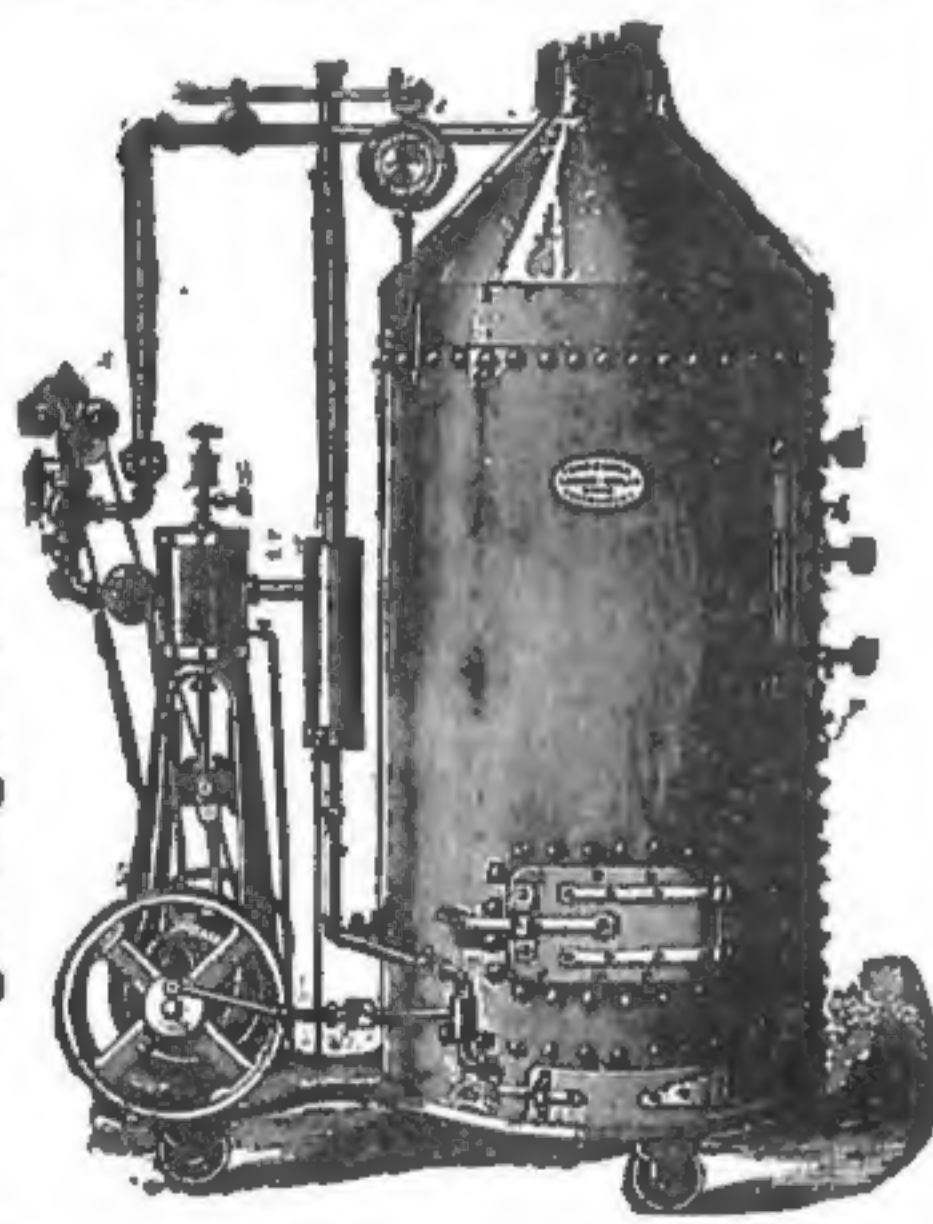
BY MAIL POSTPAID.

McFaul & Nolan, - Buffalo, N. Y.

**TONAWANDA
ENGINE AND BOILER WORKS**

A Large Assortment of Machinery.

The Best 6-Horse Power Semi-Portable Up-
right Engine and Boiler Made.



SPECIAL PRICE. GUARANTEED.

SEND FOR CATALOGUE.

ARMITAGE, HERSCHELL & CO.

Tonawanda N. Y.

New Improved Patent Head Linings.



DESCRIPTION.

These Linings are curved edgewise and flatwise, be-
sides having the edge beveled, so as to make them fit
the head and chine PERFECTLY, without springing
them edgewise when nailing.

If you use them once you will have NO
OTHER. No need of pounding fingers, as
the ends do not have to be held down while
nailing. They are much more convenient
to nail and look better than any other.
They are first tied in bundles of two hun-
dred, and, when dry, are put into bales,
weighing about fifty pounds each, and tied
with two strong wires, to make them handle
better and to prevent loosing out in transit.

Write for prices and state about the num-
ber you use per year.

To convince you of their merit, and for
the purpose of introducing them, I will
ship a sample order of from five to ten
thousand at a REDUCED RATE.

SEND US A TRIAL ORDER: SATISFACTION
GUARANTEED.

J. H. PETERS,
Owner of Patent and Manufacturer,
COLEMAN, MICH.

**L. L. WHITLOCK,
Advertising Agent**

FOR MANUFACTURERS.

TRADE JOURNALS A SPECIALTY.

P. O. DRAWER 5323. Boston, Mass.

As Agent for Advertisers instead of Papers, I obtain
the Best Rates Possible for my Customers.

*** THE INK ***

WITH WHICH THIS PAPER IS PRINTED
IS MADE BY THE

**QUEEN CITY PRINTING INK CO.
CINCINNATI, O.**

**THE STEVENS
PORTABLE MILLS**

For CORN and
FEED GRINDING

Genuine French

BUHR STONES

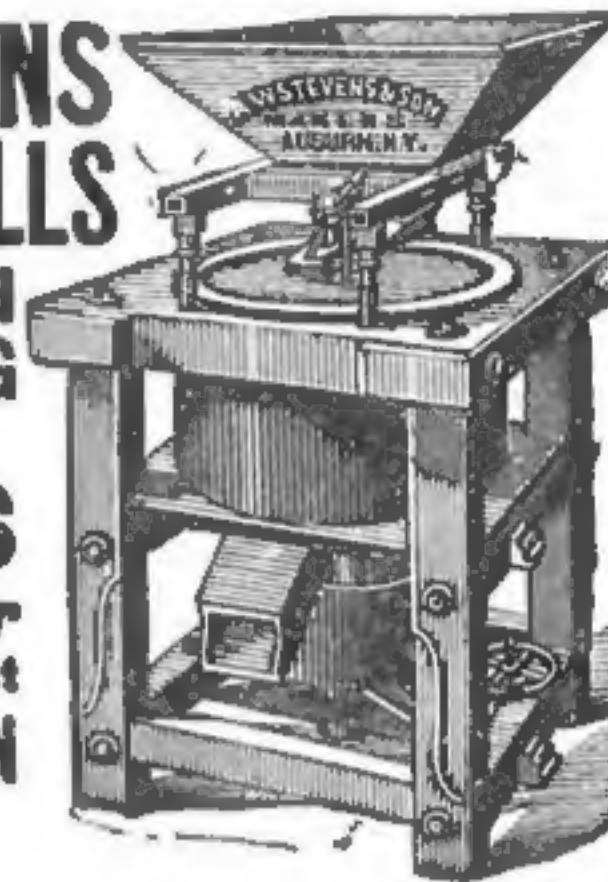
Power Corn Sheller

Prices Below the Lowest

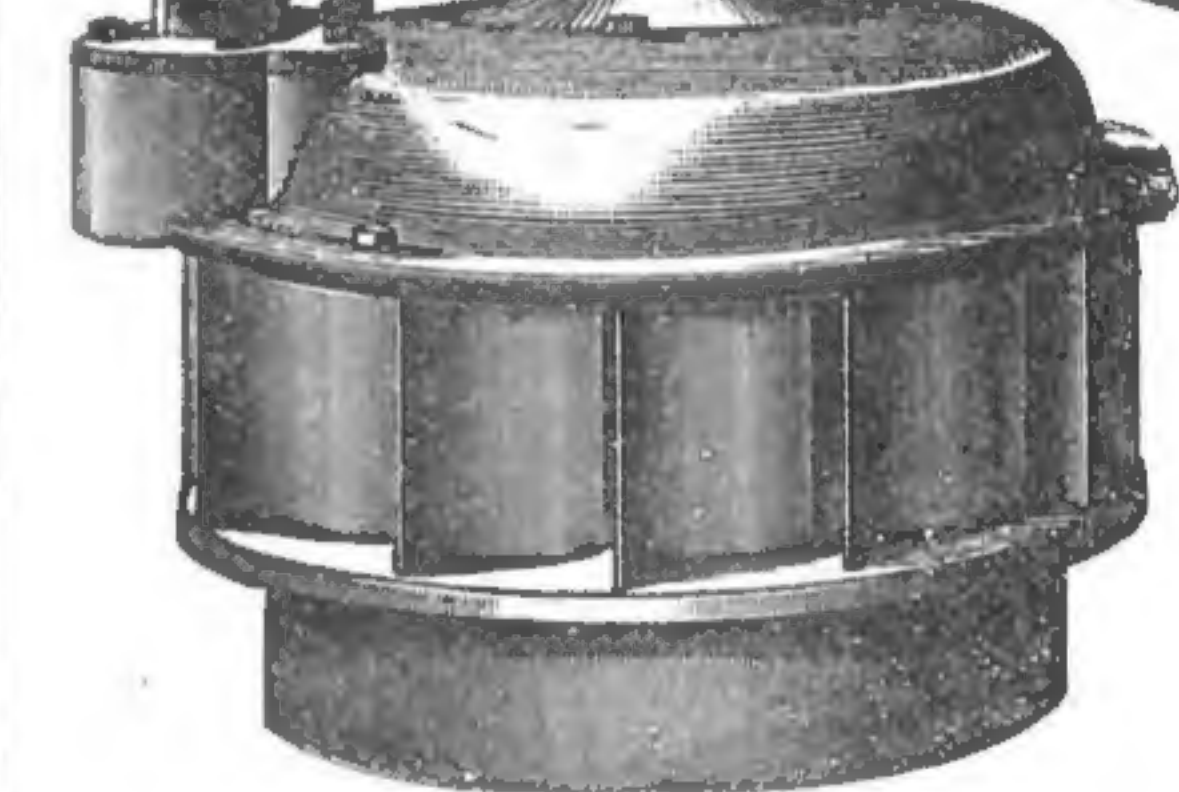
A. W. STEVENS & SON

AUBURN, N. Y.

Mention this paper.



**ALCOTT'S
IMPROVED
TURBINE
WATER
WHEEL**



THIS WHEEL GIVES HIGH RESULTS, AND
IS ACKNOWLEDGED THE BEST, MOST PRAC-
TICAL AND EFFICIENT TURBINE MADE.
FOR SIMPLICITY, DURABILITY, AND
TIGHTNESS OF GATE IT HAS NO EQUAL.

State requirements and send for Catalogue to

**T. C. ALCOTT & SON,
MOUNT HOLLY, N. J.**

The LIPPOLD DUSTLESS CORN SHELLER & CLEANER

MANUFACTURED BY

The LIPPOLD MFG. CO.

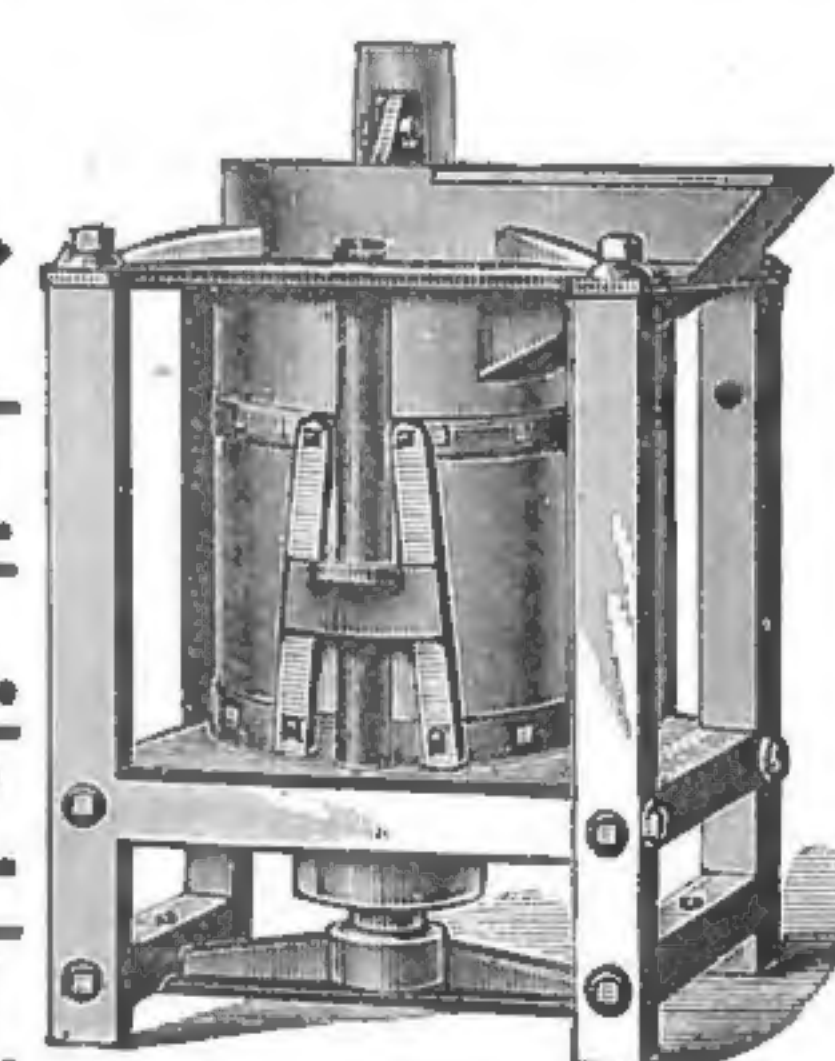
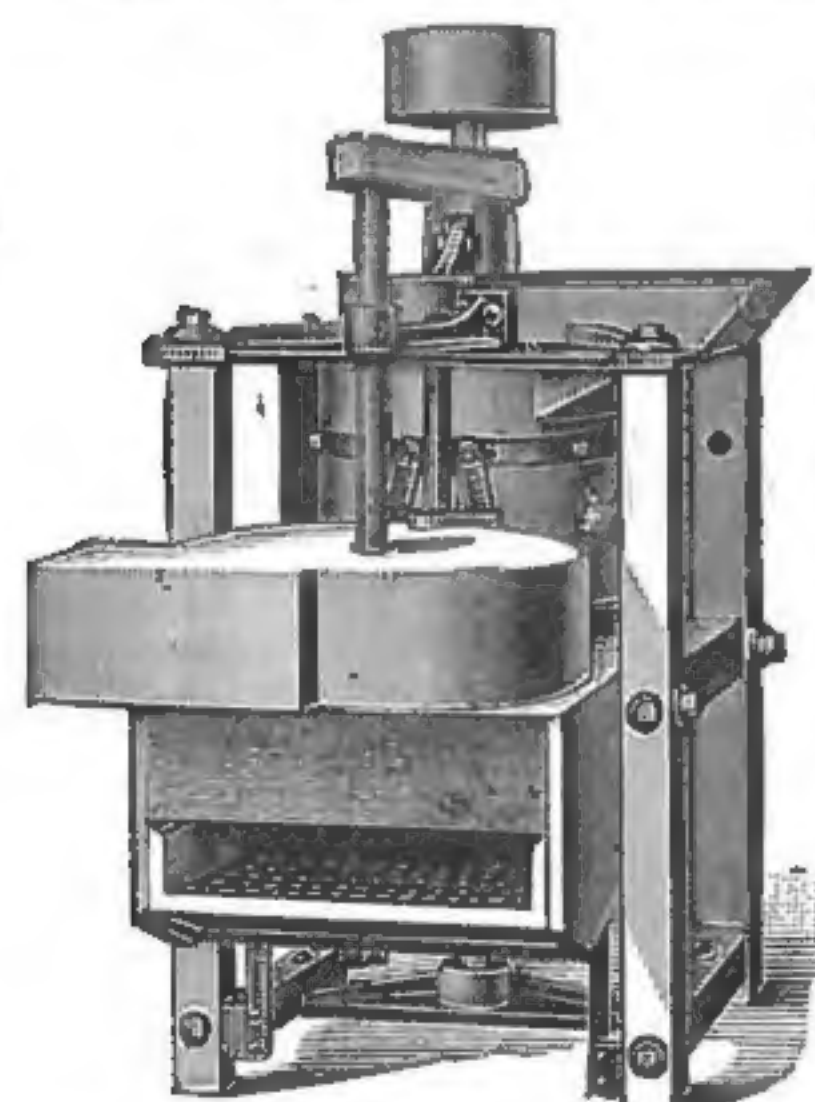
ERIE - - PENN.

THE HIGHEST CAPACITY for the LEAST MONEY.

The Best Machines for Mills and Elevators.

Machines Sent on Thirty Days' Trial.

SHELL UNHUSKED CORN AND CLEAN IT PERFECTLY.



**WRITE FOR ILLUSTRATED CIRCULAR WITH PRICES.
NAME THIS PAPER.**

INSURE IN THE TRADERS & TRAVELERS

Accident Company,
287 BROADWAY, NEW YORK.

BENEFITS.

\$5,000 for Death.
\$5,000 Loss of Limbs.
\$2,500 Loss of Limb.
\$2,500 Loss of Sight.
\$1,250 Total Disability.
\$650 Loss of One Eye.
\$25 Weekly Indemnity for
26 Weeks.
One Set of Individual Registry Plates
Included.

COST.

Four Quarterly Payments, \$10.00
Annual Dues, 1.00
Membership Fee, 5.00. \$11.00

IMPORTANT NOTICE.—The Traders & Travelers Accident Co. of New York desire the services of one responsible representative in each town to act as agent for the general transaction of their business. A liberal and permanent arrangement will be made with parties who can fill the above requirements. Address
C. S. SOMERVILLE, Sec'y.

**GIVES
MORE
POWER
USING
LESS
WATER
THAN
ANY
OTHER
WHEEL.**



**THE OLD RELIABLE
—LEFFEL—
WATER WHEEL.**
SEND FOR CATALOGUE.
**JAMES LEFFEL & CO.,
SPRINGFIELD, O., OR 110 LIBERTY ST., N.Y.**

PREJUDICE Is a thief and robs you of many good things in this age of phenomenal progress. It pays to investigate. Send for Illustrated Price List of Reliance Safety Water Columns. They protect life and property, save repairs and enforce economy. Every Column Warranted.

Reliance Gauge Co., 831 Sheriff St., Cleveland, Ohio.

THE "HARLOW" Positive Feed Lubricators.

For Marine and Stationary Engines,
Steam Pumps, Electrical and
other Machinery.

**MAXIMUM ECONOMY IN OIL.
MARKED ECONOMY IN FUEL.**

Not dependent upon or
operated by Steam
Pressure, Condensa-
tion or Gravity.
Not affected by chan-
ges of temperature.

BEING operated by some moving portion of the engine or machine to be lubricated, the "Harlow Lubricator" starts and stops with the engine or machine being lubricated, without requiring the slightest attention from the engineer or operator, always delivering the oil in any amount from a drop to a constant stream. The cup can be filled at any moment while the engine or machine being lubricated is in operation, without causing any leakage either of oil or steam.

**Harlow Lubricator Mfg. Co. BOSTON, Mass.
U. S. A.**

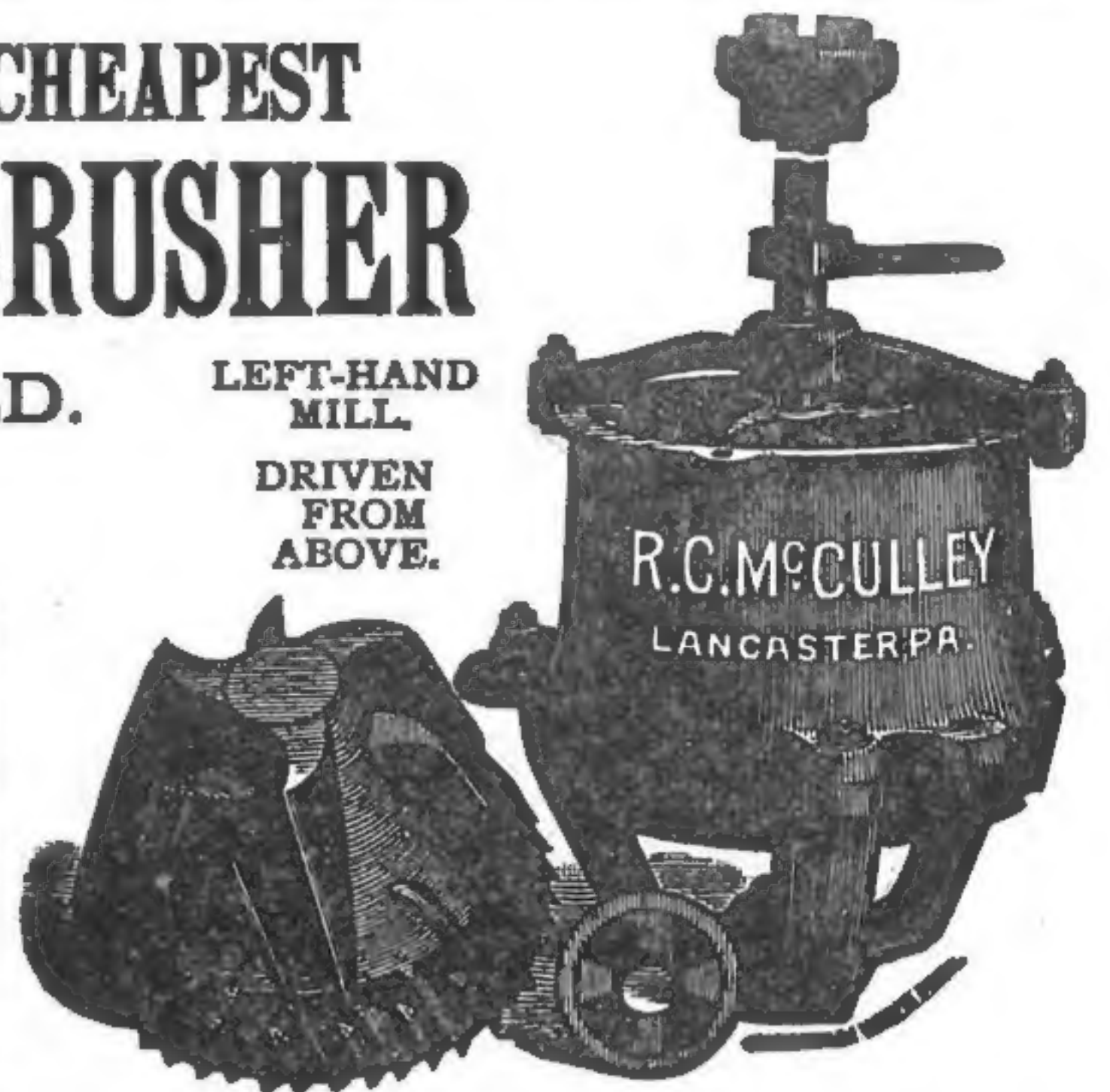
THE BEST AND CHEAPEST CORN AND COB CRUSHER IN THE WORLD.

All wearing parts cast of a steel mixture. Notice difference in construction. Most area where most work is done, where all other crushers have least area where most work is done. Low priced machinery is not the cheapest, considering durability and efficiency. Sent on 80 days' trial when satisfactory reference is furnished.

Please Send for Circulars.

R. C. McCULLEY, LANCASTER, PENN.

LEFT-HAND
MILL
DRIVEN
FROM
ABOVE.



RIGHT-HAND RUNNER.

\$15 Will Buy the Best and Cheapest CORN AND COB CRUSHER IN THE WORLD!



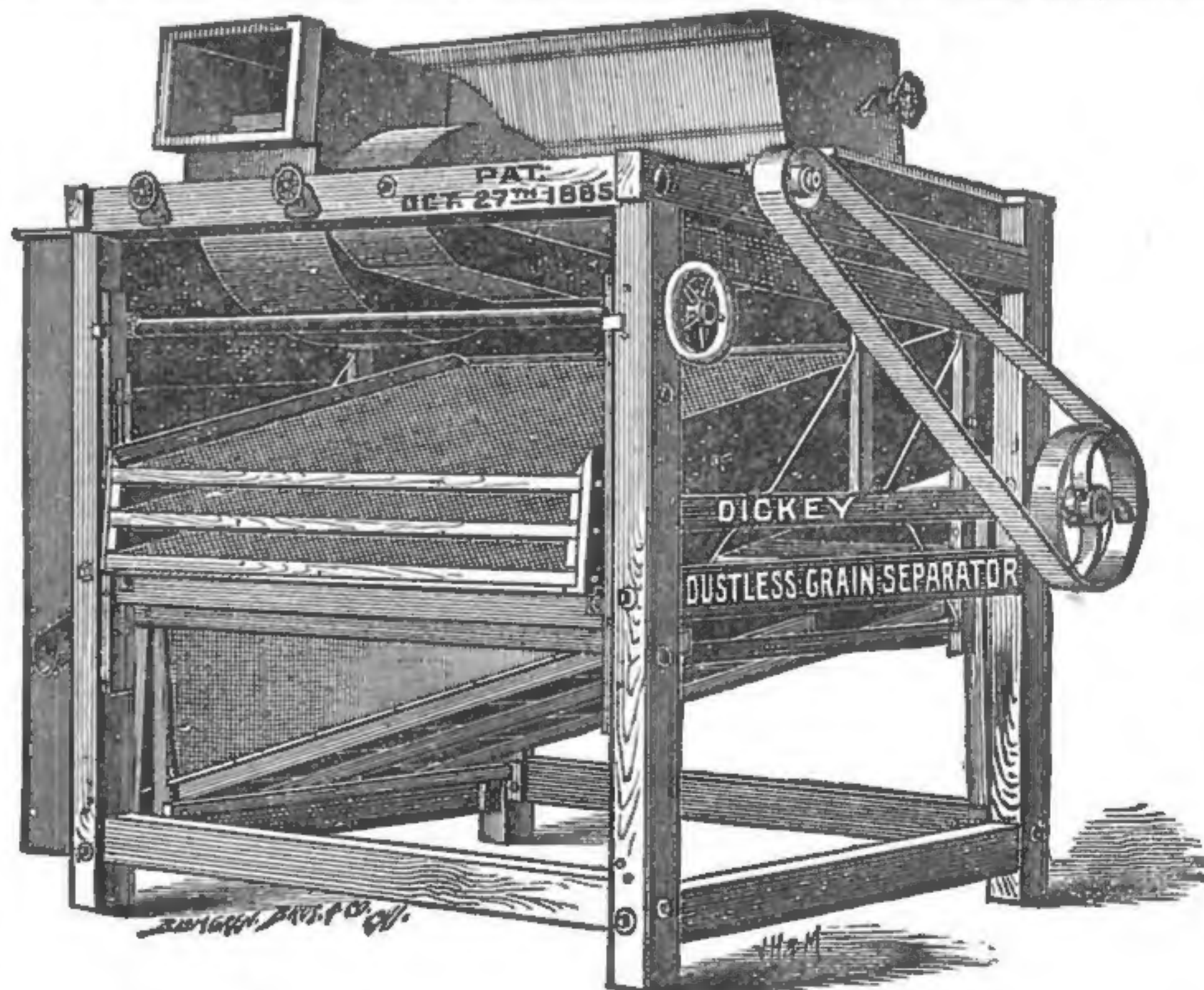
It can be driven either from above or below. Thousands of these Crushers are now in use throughout the United States and Canada, and are giving entire satisfaction. Send for circular, giving testimonials from millers who are using our Crusher, and know a good thing when they see it.

T. B. WOOD & SONS, CHAMBERSBURG, PA.

DICKEY DUSTLESS GRAIN AND FLAX SEPARATOR

This Separator is our latest and most perfect, and guaranteed to be the superior of any now on the market. This machine, as can be seen by the cut, is not a warehouse fanning mill with one patent attachment, but is a Dustless Separator, made for the express purpose of thoroughly cleaning and separating all kinds of grain in large quantities; its construction is such that the working machinery and weight is all within the parts or anchors.

WE CLAIM FOR IT SUPERIORITY.

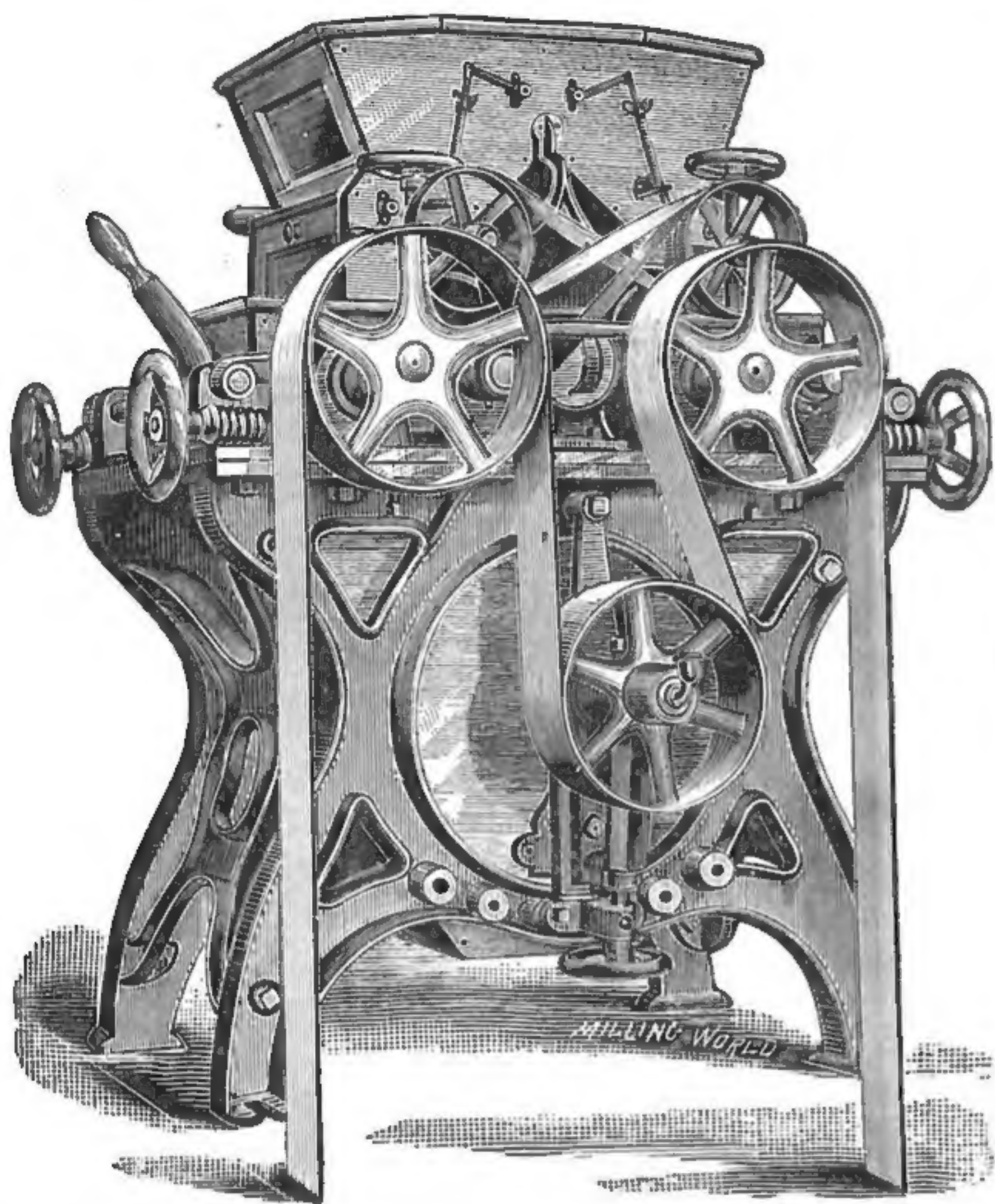


WE CLAIM FOR IT SUPERIORITY.

We claim for it Superiority over everything of the kind made, in simpleness, durability, saving of power, capacity and cost of construction. Its height will accommodate any number of spouts from different points, without moving machine. They have a capacity from 700 to 1,500 bushels per hour. We also control exclusively the manufacture of the celebrated Dickey Giant, End and Side Shake, Warehouse Mills, that have attained such a world-wide reputation. Sent on approval to any reliable party. For full particulars address,

A. P. DICKEY MANUFACTURING CO., Successors to Dickey & Pease, RACINE, WIS.

JOHN HUTCHISON MFG. CO., Mill Builders and Mill Furnishers.



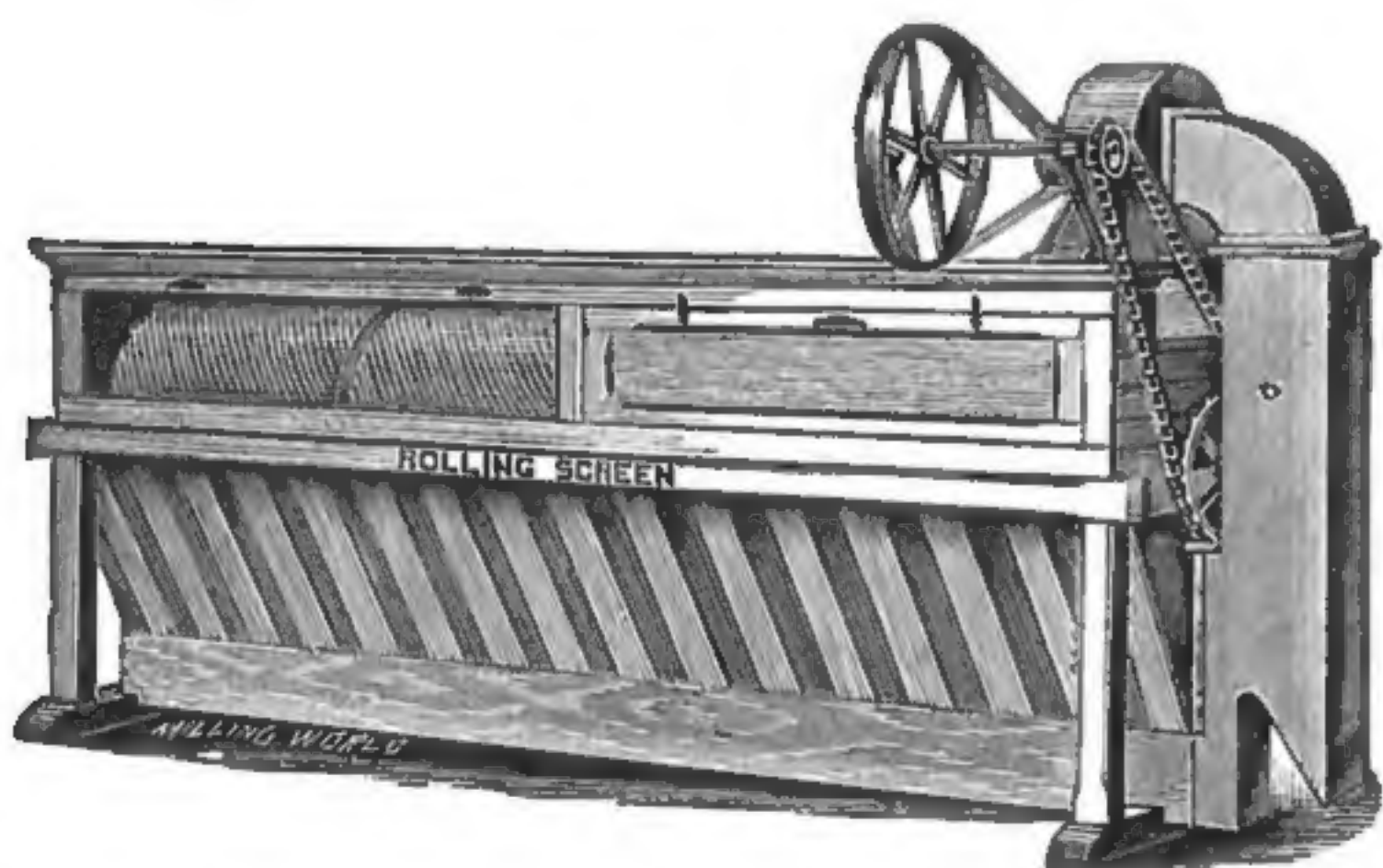
"The Rickerson." The original six inch 4 Roller Mill. We now own the patents on this mill and after greatly improving the mill manufacture them in four sizes:

6x12 inch.

6x18 inch.

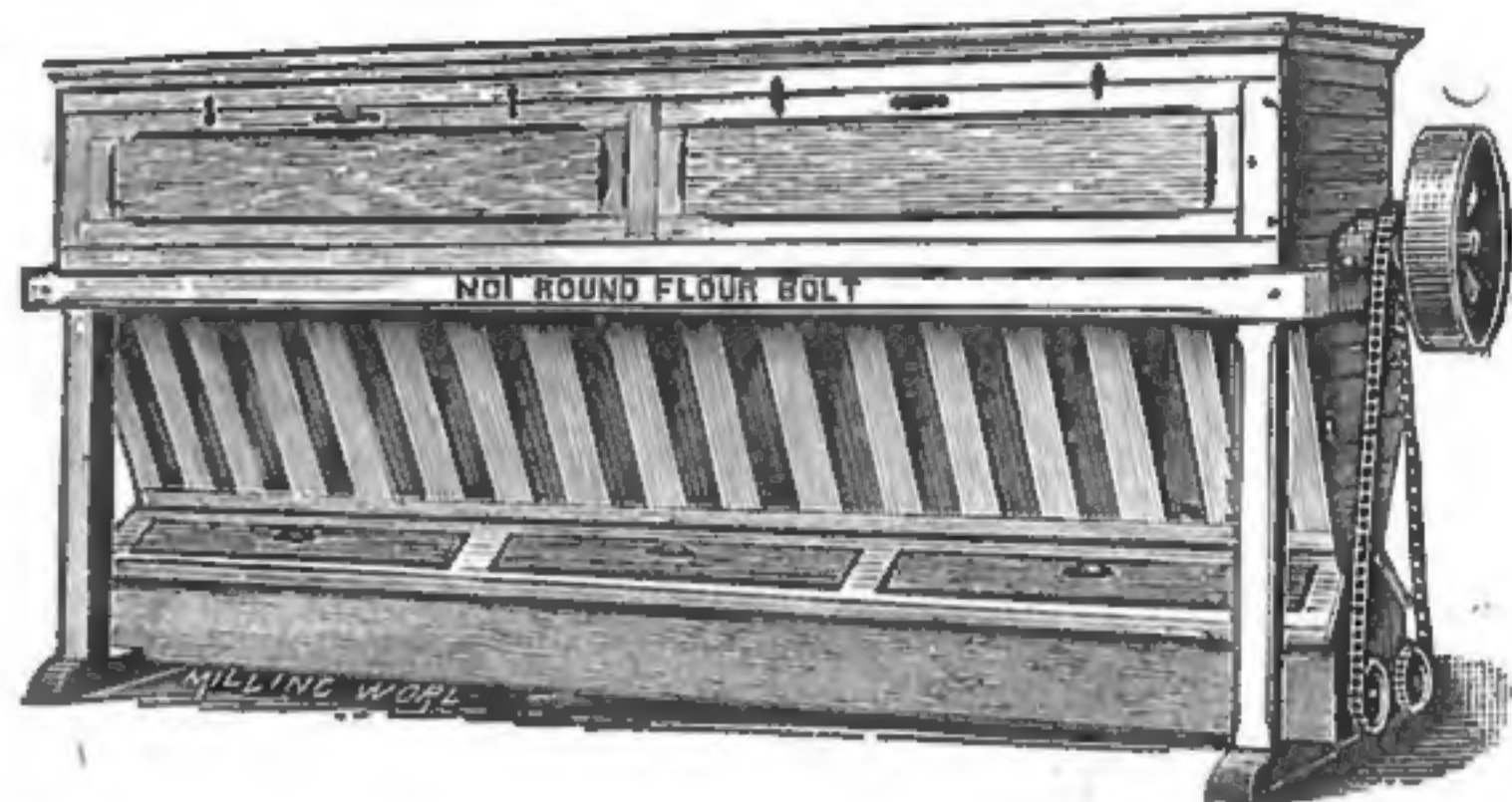
6x15 "

6x20 "

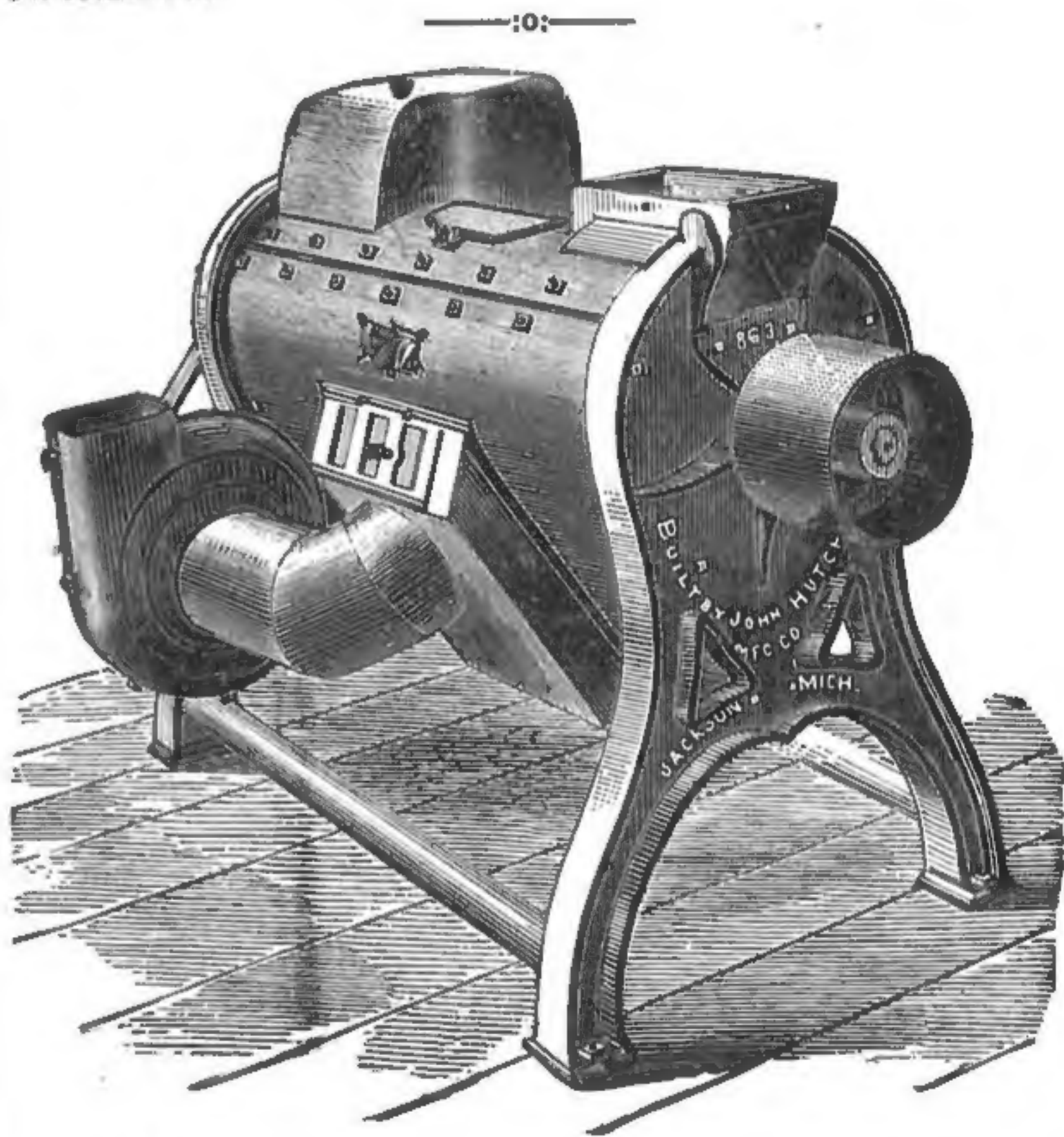


The above cut represents our New Rolling Screen, which is absolutely dustless and has as much scouring qualities as any two scouring machines now being made.

Send for Estimates for Our Full Roller Mills of any Capacity.



The above cut shows our New Round Slow Running Flour Bolt. We also build a Cylinder or Round Scalping Reel and we have lately built a number of new mills of medium capacity, using our Roller Mills, our Round Flour Bolts and Scalping Reels, getting better results than is usually obtained.



Hutchison's New Dustless Iron Corn Sheller, especially adapted for Mill and Elevator use.

—:ADDRESS ALL CORRESPONDENCE TO:—

John Hutchison Mfg. Co.

JACKSON. - - MICHIGAN.



ELEVATOR BUCKET.

PLEASE NOTICE.

Our patents not only cover Seamless, Drawn, Stamped, Pressed or Forged Elevator Buckets; but also Pre-Date and Cover Round-Cornered Elevator Buckets when made Seamless, and are the Only patents ever issued in the World for a Pressed, Stamped, Drawn or Forged Seamless Elevator Bucket.

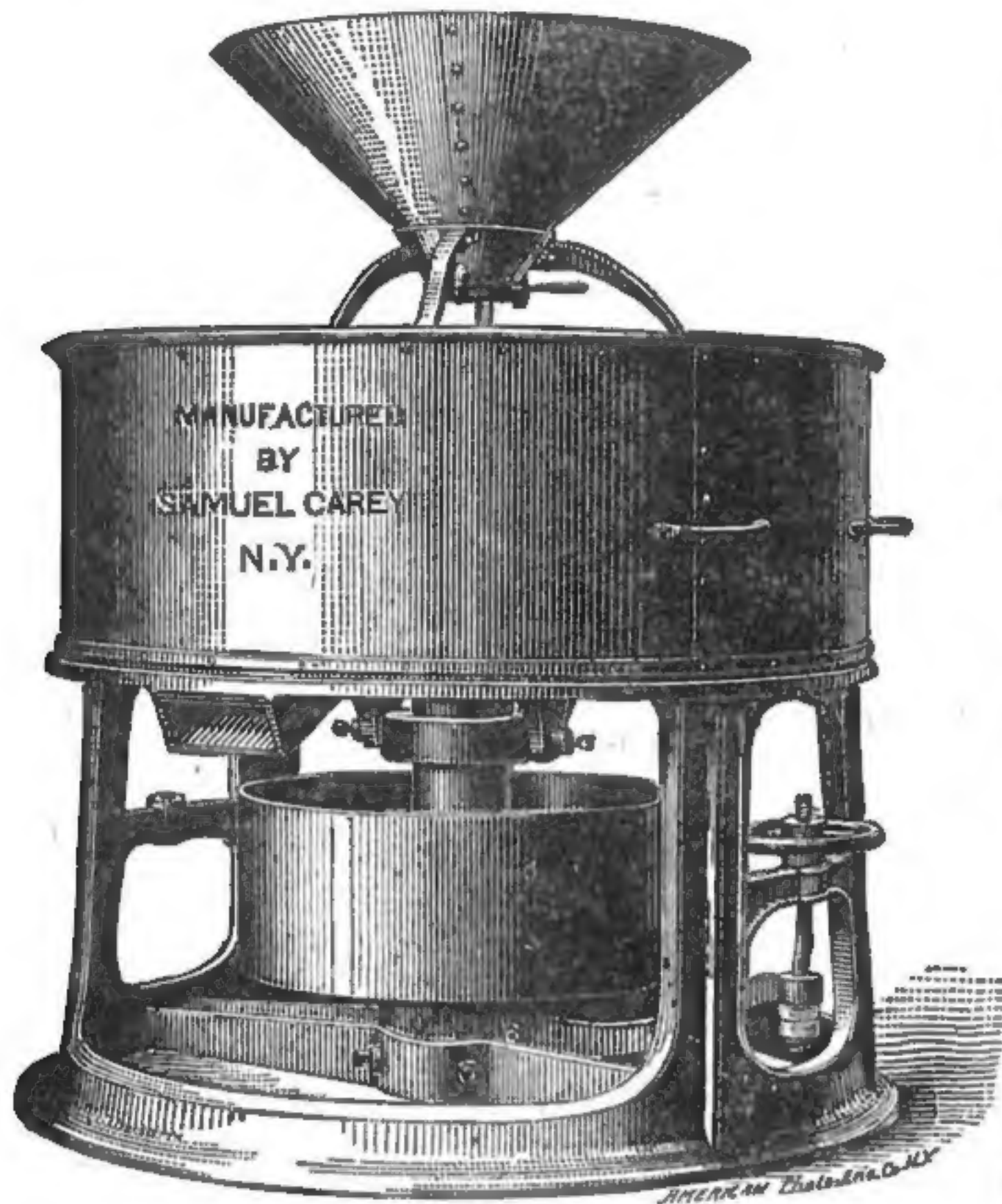
Stamping and Pressing of Sheet Metals for all Classes of Work. Also Tinning, Galvanizing and Japanning.

THE AVERY STAMPING CO.,

Successors to The Avery Elevator Bucket Co.,
Cleveland, Ohio, U. S. A.



CLAY BUCKET.



SELF-TRAMMING

PORTABLE MILL

BEST GRINDING MILL MADE.

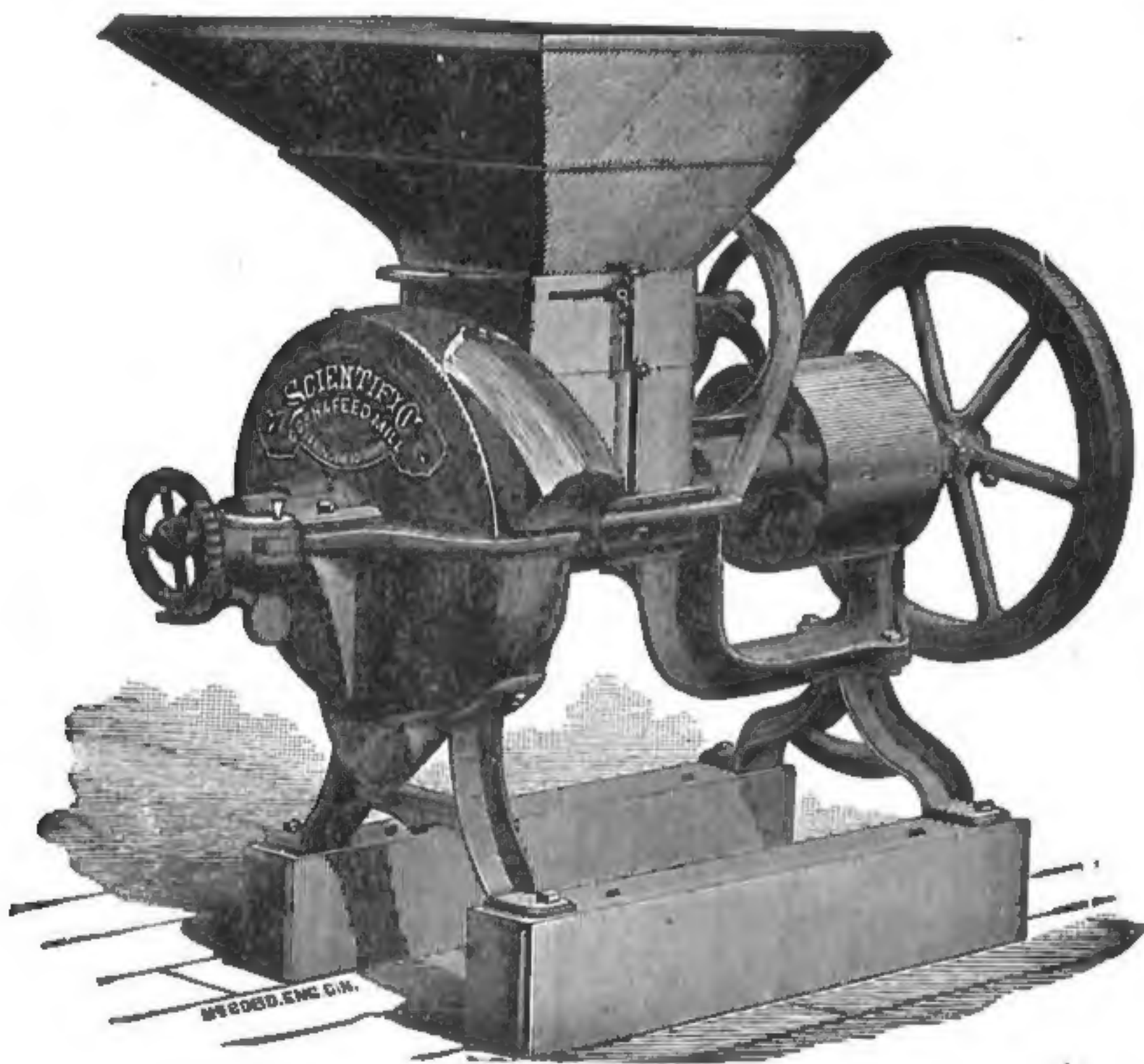
BOLTING CLOTH

WRITE FOR DISCOUNTS.

**BURR MILLSTONES
CHEAP.**

Send for "SPECIAL PRICES," Giving Size
Wanted, to

SAMUEL CAREY, 17 BROADWAY, NEW YORK

**THE SCIENTIFIC
GRINDING MILL.**

POSITIVELY THE BEST MILL ON EARTH.

GRINDS PERFECTLY, EAR CORN, SHELLED CORN,
AND ALL GRAINS.

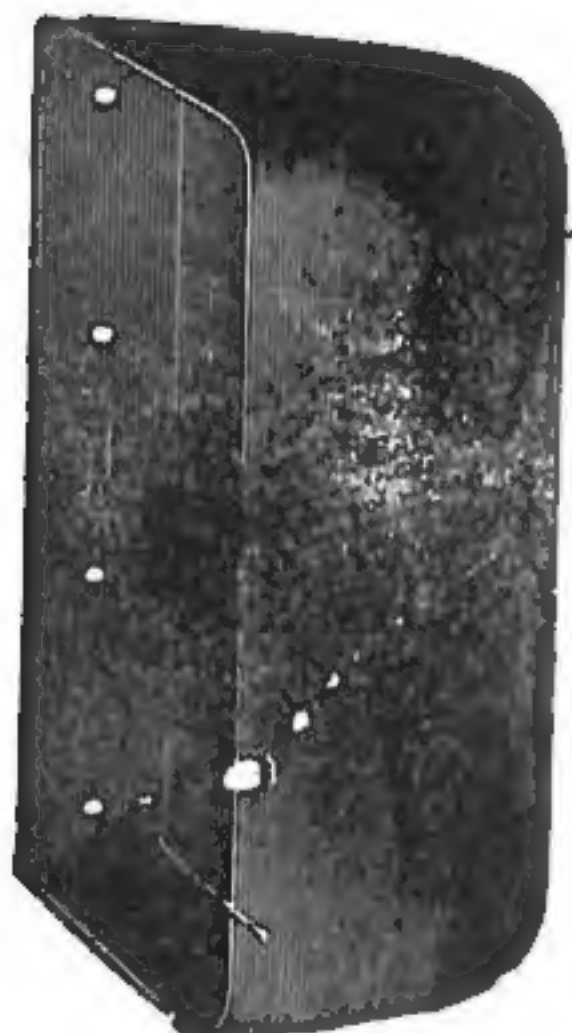
GRINDING PLATES A SPECIAL METAL

*Hard as Steel, Guaranteed to Grind from Five to Eight
Thousand Bushels before wearing out.*

SEND FOR ILLUSTRATED CATALOGUE, PRICES, ETC.

THE FOOS MFG. CO.

SPRINGFIELD OHIO.

STILL ON TOP.

Perhaps the **HIGHEST COMPLIMENT** that could be paid the "Salem" bucket is the fact that during the past few years ITS SHAPE HAS BEEN SO CLOSELY IMITATED by other manufacturers as to infringe our patented rights, but experience reveals the **IMPERFECTIONS OF IMITATIONS**, and we therefore take it as a **FURTHER COMPLIMENT** to the "SALEM" bucket that some of its old patrons who were *Induced to Try the Imitations* have now *Returned to the Salem Bucket, thereby Acknowledging it to be the Most Satisfactory.* Don't be deceived by other makes of buckets that are claimed to be "Just as Good." Insist upon having the **ORIGINAL AND RELIABLE SALEM BUCKET.** All legitimate Salem buckets are plainly marked with the word]

SALEM

W. J. CLARK & CO., SOLE Manufacturers **SALEM, OHIO.**

THORNBURGH & GLESSNER, General Agents, CHICAGO, ILL.